W02916-Q25

Quanterra

0052757

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CERTIFICATE OF ANALYSIS

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

RECEIVED
MAR 20 2000
EDMC

JAN 2000
RECEIVED
Data

January 25, 2000

Attention: Joan Kessner

SAF Number	:	B99-078
Date SDG Closed	:	September 6, 1999
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W02916
Data Deliverable	:	Summary

I. Introduction

Between August 23, 1999 and September 2, 1999, three soil samples were received at the Quanterra Richland Laboratory (QRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QESRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D1N6R10	B0W5P8	SOIL	8/23/99
9D1WKQ10	B0W8B1	SOIL	8/30/99
9D237K10	B0W9H9	SOIL	9/2/99

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
Americium-241 by method RICH-RC-5080
Uranium-234, -235, -238 by method RICH-RC-5079
Thorium-232 by method RICH-RC-5011
Neptunium-237 by method RICH-RC-5009

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Total Uranium
Total Uranium by method RICH-RC-5058

III. Quality Control

The analytical results for each analysis performed under SDG W02916 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010:
The LCS, batch blank, samples and sample duplicate (B0W8B1) results are within contractual requirements.

Americium-241 by method RICH-RC-5080:
The LCS, batch blank, samples and sample duplicate (B0W8B1) results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, samples and sample duplicate (B0W5P8) results are within contractual requirements.

Thorium-232 by method RICH-RC-5011:
The LCS, batch blank, samples and sample duplicate (B0W5P8) results are within contractual requirements.

Neptunium-237 by method RICH-RC-5009:
The separatory funnel broke during the extraction of the matrix spike sample; the matrix spike analysis was lost. The analytical batch was reanalyzed. The matrix spike recovery for the reanalysis failed at 5%. For both the original and reanalysis batches, the LCS recoveries were within requirements. The analytical batch was analyzed for a third time. The analysis recoveries for both the matrix spike and LCS were failed at 37% and 50% recovery respectively. Since all analyses confirm the sample (and duplicate sample) results are below achieved MDAs which are less than the CRDL, the final analysis results are accepted for reporting. Except as noted, the LCS, batch blank, sample and sample duplicate (B0W5P8) results are within contractual requirements.

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
MDAs achieved for samples B0W5P8 and B0W5P8 duplicate do not meet the CRDL for Cs-137 due to matrix effects. The sample was re-prepared into a smaller geometry (25mL) for an additional, more efficient, count on the detector. The recount confirmed the original larger volume count with an approximately 5% RPD. Since the detected activities for this sample and its duplicate exceed the achieved MDAs by more than 100x, the data are accepted for reporting. One original count and the reduced volume recount have been included in the final report. Except as noted, the LCS, batch blank, samples and sample duplicate (B0W5P8) results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006:
The analyst performing the separation questioned a possible mix-up during analysis. The batch was reanalyzed. The LCS and batch blank were switched during analysis, however, the sample results confirmed the original analysis results. Based on the activity levels of the samples and QC and using the first analysis results as confirmation, it is clear that only the LCS and blank were switched during the reanalysis. Therefore, the sample identifications were corrected and the results recalculated for the QC samples. The reanalysis results were accepted for reporting. Except as noted, the LCS, batch blank, samples and sample duplicate (B0W5P8) results are within contractual requirements.

Total Uranium
Total Uranium by method RICH-RC-5058:
The LCS, batch blank, samples, sample duplicate (B0W5P8) and sample matrix spike (B0W8B1) results are within contractual requirements.

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

Reviewed and approved:

Jackie Waddell

Jackie Waddell
Project Manager

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D1N6R10	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8	**DATE RECEIVED:**	8/23/99 2:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TOTAL-URANIUM	2.85E+00		0.0E+00	4.6E-01	7.29E-05	ug/g		RICHRC5058
AM-241	5.94E+00		3.2E-01	1.1E+00	1.75E-02	pCi/g	94.85%	RICHRC5080
PU-238	3.94E-01	J	1.0E-01	1.3E-01	2.69E-02	pCi/g	50.06%	RICHRC5010
PU239/40	2.02E+01		7.3E-01	3.7E+00	3.33E-02	pCi/g	50.06%	RICHRC5010
TH-228	6.65E-01	J	1.5E-01	2.2E-01	7.44E-02	pCi/g	65.00%	RICHRC5011
TH-230	4.03E-01	J	1.1E-01	1.5E-01	4.04E-02	pCi/g	65.00%	RICHRC5011
TH-232	5.91E-01	J	1.4E-01	2.0E-01	3.26E-02	pCi/g	65.00%	RICHRC5011
U-234	1.19E+00		1.6E-01	2.6E-01	2.62E-02	pCi/g	84.19%	RICHRC5079
U-235	4.68E-02	J	3.2E-02	3.3E-02	2.11E-02	pCi/g	84.19%	RICHRC5079
U-238	1.17E+00		1.6E-01	2.6E-01	3.11E-02	pCi/g	84.19%	RICHRC5079

Number of Results: 10

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D1N6R20	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8	**DATE RECEIVED:**	8/23/99 2:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	6.79E-01	U	3.3E+00	3.3E+00	5.47E+00	pCi/g		RICHRC5017
CO-60	1.28E-02	U	2.1E-01	2.1E-01	4.17E-01	pCi/g		RICHRC5017
CS-137	5.23E+03		5.2E+02	5.2E+02	2.89E+00	pCi/g		RICHRC5017
EU-152	3.50E+00	U	6.6E+00	6.6E+00	1.08E+01	pCi/g		RICHRC5017
EU-154	2.69E+00	U	1.2E+00	1.2E+00	2.67E+00	pCi/g		RICHRC5017
EU-155	4.09E+00	U	3.5E+00	3.5E+00	5.65E+00	pCi/g		RICHRC5017
TH-232	1.67E+01	U	1.4E+01	1.4E+01	2.27E+01	pCi/g		RICHRC5017
STRONTIUM	4.32E+00		2.5E-01	1.3E+00	1.26E-01	pCi/g	72.00%	RICHRC5006

Number of Results: 8

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D1N6R30	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8	**DATE RECEIVED:**	8/23/99 2:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NP-237	-3.15E-04	U	6.3E-04	6.3E-04	1.58E-02	pCi/g	100.00%	RICHRC5009

Number of Results: 1

Result = IDL When Not Detected

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

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SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D1WKQ10	**MATRIX:**	SOIL
CLIENT ID:	B0W8B1	**DATE RECEIVED:**	8/30/99 12:41:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TOTAL-URANIUM	9.69E-01	J	0.0E+00	2.3E-01	7.29E-05	ug/g		RICHRC5058
AM-241	2.44E-02	J	2.0E-02	2.0E-02	1.10E-02	pCi/g	98.30%	RICHRC5080
PU-238	0.00E+00	U	0.0E+00	1.2E-02	1.30E-02	pCi/g	64.30%	RICHRC5010
PU239/40	-7.67E-04	U	1.1E-03	1.1E-03	2.19E-02	pCi/g	64.30%	RICHRC5010
TH-228	9.58E-01	J	2.0E-01	3.1E-01	9.05E-02	pCi/g	54.14%	RICHRC5011
TH-230	8.53E-01	J	1.8E-01	2.8E-01	4.00E-02	pCi/g	54.14%	RICHRC5011
TH-232	8.53E-01	J	1.8E-01	2.8E-01	4.00E-02	pCi/g	54.14%	RICHRC5011
U-234	5.35E-01	J	1.2E-01	1.6E-01	5.35E-02	pCi/g	69.02%	RICHRC5079
U-235	1.64E-02	U	2.3E-02	2.4E-02	4.16E-02	pCi/g	69.02%	RICHRC5079
U-238	7.52E-01	J	1.4E-01	2.0E-01	5.00E-02	pCi/g	69.02%	RICHRC5079
AM-241	-3.75E-02	U	6.3E-02	6.3E-02	1.04E-01	pCi/g		RICHRC5017
CO-60	-3.37E-03	U	1.2E-02	1.2E-02	2.10E-02	pCi/g		RICHRC5017
CS-137	3.38E-02	J	1.8E-02	1.8E-02	2.25E-02	pCi/g		RICHRC5017
EU-152	8.55E-03	U	3.1E-02	3.1E-02	5.18E-02	pCi/g		RICHRC5017
EU-154	-1.35E-02	U	4.0E-02	4.0E-02	6.83E-02	pCi/g		RICHRC5017
EU-155	6.77E-02	U	3.4E-02	3.4E-02	5.93E-02	pCi/g		RICHRC5017
TH-232	8.56E-01		1.7E-01	1.7E-01	1.08E-01	pCi/g		RICHRC5017

Number of Results: 17

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D1WKQ20	**MATRIX:**	SOIL
CLIENT ID:	B0W8B1	**DATE RECEIVED:**	8/30/99 12:41:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	5.11E-02	U	6.2E-02	6.4E-02	1.33E-01	pCi/g	62.60%	RICHRC5006

Number of Results: 1

Result = IDL When Not Detected

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

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SAMPLE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	9D237K10	**MATRIX:**	SOIL
CLIENT ID:	B0W9H9	**DATE RECEIVED:**	9/2/99 2:50:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	2.10E-02	U	2.0E-02	2.0E-02	2.97E-02	pCi/g		RICHRC5017
CO-60	4.06E-03	U	1.0E-02	1.0E-02	1.80E-02	pCi/g		RICHRC5017
CS-137	2.68E-02	J	1.4E-02	1.4E-02	1.76E-02	pCi/g		RICHRC5017
EU-152	3.59E-02	U	2.8E-02	2.8E-02	4.80E-02	pCi/g		RICHRC5017
EU-154	5.69E-03	U	3.0E-02	3.0E-02	5.25E-02	pCi/g		RICHRC5017
EU-155	4.37E-02	U	2.5E-02	2.5E-02	4.32E-02	pCi/g		RICHRC5017
TH-232	3.71E-01		1.1E-01	1.1E-01	1.16E-01	pCi/g		RICHRC5017

Number of Results: 7

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DUPLICATE RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R1ER	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TOTAL-URANIUM	2.88E+00		0.0E+00	4.6E-01	7.29E-05	ug/g		RICHRC5058	2.85E+00	0.82%

Number of Results: 1

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:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R1FR	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	1.40E+00		1.7E-01	3.0E-01	2.58E-02	pCi/g	81.40%	RICHRC5079	1.19E+00	15.91%
U-235	6.52E-02	J	3.7E-02	3.9E-02	2.92E-02	pCi/g	81.40%	RICHRC5079	4.68E-02	32.82%
U-238	9.62E-01	J	1.4E-01	2.2E-01	2.36E-02	pCi/g	81.40%	RICHRC5079	1.17E+00	19.82%

Number of Results: 3

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:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R1GR	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
TH-228	5.65E-01	J	1.5E-01	2.0E-01	7.67E-02	pCi/g	58.16%	RICHRC5011	6.65E-01	16.29%
TH-230	6.54E-01	J	1.5E-01	2.2E-01	3.56E-02	pCi/g	58.16%	RICHRC5011	4.03E-01	47.43%
TH-232	6.45E-01	J	1.5E-01	2.2E-01	3.56E-02	pCi/g	58.16%	RICHRC5011	5.91E-01	8.77%

Number of Results: 3

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:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R1KR	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R20		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	1.68E+00		4.9E-01	4.9E-01	6.57E-01	pCi/g		RICHRC5017	6.79E-01	84.86%
CO-60	1.17E-01	U	2.9E-02	2.9E-02	4.12E-02	pCi/g		RICHRC5017	1.28E-02	160.62%
CS-137	4.90E+03		4.9E+02	4.9E+02	3.53E-01	pCi/g		RICHRC5017	5.23E+03	6.59%
EU-152	-9.08E-01	U	1.1E+00	1.1E+00	1.81E+00	pCi/g		RICHRC5017	3.50E+00	340.06%
EU-154	2.76E+00		3.7E-01	3.7E-01	1.79E-01	pCi/g		RICHRC5017	2.69E+00	2.50%
EU-155	2.09E+00	U	7.8E-01	7.8E-01	1.09E+00	pCi/g		RICHRC5017	4.09E+00	64.67%
TH-232	-3.48E-01	U	2.3E+00	2.3E+00	3.79E+00	pCi/g		RICHRC5017	1.67E+01	208.53%

Number of Results: 7

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:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R1LR	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R20		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	4.53E+00		2.6E-01	1.3E+00	1.34E-01	pCi/g	65.70%	RICHRC5006	4.32E+00	4.71%

Number of Results: 1

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:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R2NR	**MATRIX:**	SOIL
CLIENT ID:	B0W5P8 DUP	**DATE RECEIVED:**	8/23/99 2:30:00 PM
ORIG LAB SAMPLE ID:	9D1N6R30		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NP-237	0.00E+00	U	0.0E+00	1.0E-02	1.10E-02	pCi/g	100.00%	RICHRC5009	-3.15E-04	200.00%

Number of Results: 1

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:**	W02916 / 9619
LAB SAMPLE ID:	D1WKQ1DR	**MATRIX:**	SOIL
CLIENT ID:	B0W8B1 DUP	**DATE RECEIVED:**	8/30/99 12:41:00 P
ORIG LAB SAMPLE ID:	9D1WKQ10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	8.75E-03	U	1.2E-02	1.2E-02	1.19E-02	pCi/g	94.02%	RICHRC5080	2.44E-02	94.30%

Number of Results: 1

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:**	W02916 / 9619
LAB SAMPLE ID:	D1WKQ1ER	**MATRIX:**	SOIL
CLIENT ID:	B0W8B1 DUP	**DATE RECEIVED:**	8/30/99 12:41:00 P
ORIG LAB SAMPLE ID:	9D1WKQ10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	8.45E-03	U	1.7E-02	1.7E-02	2.29E-02	pCi/g	37.96%	RICHRC5010	0.00E+00	200.00%
PU239/40	8.43E-03	U	1.7E-02	1.7E-02	2.29E-02	pCi/g	37.96%	RICHRC5010	-7.67E-04	240.00%

Number of Results: 2

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:**	W02916 / 9619
LAB SAMPLE ID:	D261H11B	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TOTAL-URANIUM	1.08E-03	J	0.0E+00	3.2E-04	7.29E-05	ug/g		RICHRC5058

Number of Results: 1

Result = IDL When Not Detected

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

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rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261L11B	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	3.69E-03	U	9.8E-03	9.8E-03	2.42E-02	pCi/g	84.05%	RICHRC5079
U-235	-1.17E-03	U	1.3E-03	1.4E-03	2.42E-02	pCi/g	84.05%	RICHRC5079
U-238	-1.17E-03	U	1.3E-03	1.4E-03	2.42E-02	pCi/g	84.05%	RICHRC5079

Number of Results: 3

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261N11X	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	9.49E-03	U	1.3E-02	1.4E-02	1.29E-02	pCi/g	86.37%	RICHRC5080

Number of Results: 1

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261N13B	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.38E-02	U	2.0E-02	2.0E-02	2.89E-02	pCi/g	57.29%	RICHRC5080

Number of Results: 1

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME:	**QUANTERRA, Richland**	**SDG /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261P11X	**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	2.2E-02	2.47E-02	pCi/g	33.13%	RICHRC5010
PU239/40	-7.29E-04	U	1.5E-03	1.5E-03	3.67E-02	pCi/g	33.13%	RICHRC5010

Number of Results: 2

Result = IDL When Not Detected

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

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02916 / 9619

LAB SAMPLE ID: D261P13B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-1.17E-03	U	2.3E-03	2.3E-03	5.86E-02	pCi/g	22.35%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	3.6E-02	3.94E-02	pCi/g	22.35%	RICHRC5010

Number of Results: 2

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02916 / 9619

LAB SAMPLE ID: D261Q11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
TH-228	-3.45E-03	U	2.6E-03	2.7E-03	3.81E-02	pCi/g	89.22%	RICHRC5011
TH-230	0.00E+00	U	0.0E+00	1.4E-02	1.56E-02	pCi/g	89.22%	RICHRC5011
TH-232	0.00E+00	U	0.0E+00	1.4E-02	1.56E-02	pCi/g	89.22%	RICHRC5011

Number of Results: 3

Result = IDL When Not Detected

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

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02916 / 9619

LAB SAMPLE ID: D28FW11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	3.43E-03	U	2.2E-02	2.2E-02	3.68E-02	pCi/g		RICHRC5017
CO-60	4.24E-03	U	7.4E-03	7.4E-03	1.37E-02	pCi/g		RICHRC5017
CS-137	1.40E-05	U	7.2E-03	7.2E-03	1.25E-02	pCi/g		RICHRC5017
EU-152	9.85E-04	U	2.0E-02	2.0E-02	3.39E-02	pCi/g		RICHRC5017
EU-154	-1.68E-02	U	2.2E-02	2.2E-02	3.63E-02	pCi/g		RICHRC5017
EU-155	5.28E-03	U	1.6E-02	1.6E-02	2.88E-02	pCi/g		RICHRC5017
TH-232	1.00E-01	U	4.7E-02	4.7E-02	8.48E-02	pCi/g		RICHRC5017

Number of Results: 7

Result = IDL When Not Detected

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

Quanterra Analytical Services, Inc

rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02916 / 9619

LAB SAMPLE ID: D49FC11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.54E-03	U	3.9E-02	3.9E-02	9.35E-02	pCi/g	95.70%	RICHRC5006

Number of Results: 1

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

Quanterra Analytical Services, Inc
rptChemRadBlank; v3.41

Quanterra

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02916 / 9619

LAB SAMPLE ID: D5WCF11B **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NP-237	0.00E+00	U	0.0E+00	1.0E-02	1.12E-02	pCi/g	100.00%	RICHRC5009

Number of Results: 1

Result = IDL When Not Detected

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

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261H12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TOTAL-URANIUM	2.22E-01	J	0.0E+00	3.6E-02	7.29E-05	ug/g		2.02E-01	110.19%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261L12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	7.07E-01	J	1.1E-01	1.6E-01	2.61E-02	pCi/g	97.50%	8.69E-01	81.32%
U-235	1.29E-02	U	1.5E-02	1.5E-02	1.77E-02	pCi/g	97.50%	3.96E-02	32.42%
U-238	8.49E-01	J	1.2E-01	1.9E-01	2.20E-02	pCi/g	97.50%	9.10E-01	93.24%

Number of Results: 3

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261N12M	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	4.55E+00		4.2E-01	9.8E-01	3.81E-02	pCi/g	44.85%	4.56E+00	99.75%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261N14S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	4.21E+00		2.7E-01	7.7E-01	1.19E-02	pCi/g	95.47%	4.57E+00	92.13%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261P12M	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	3.86E+00		3.3E-01	7.8E-01	3.83E-02	pCi/g	46.18%	3.40E+00	113.35%

Number of Results: 1

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261P14S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	3.09E+00		3.5E-01	7.0E-01	3.99E-02	pCi/g	34.28%	3.40E+00	90.88%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

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Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D261Q12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
TH-230	9.15E-01	J	1.5E-01	2.7E-01	2.49E-02	pCi/g	91.77%	1.13E+00	80.97%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D28FW12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.31E-01		5.2E-02	5.2E-02	3.95E-02	pCi/g		3.09E-01	107.23%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D49FC12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	1.01E+00		1.1E-01	3.1E-01	9.27E-02	pCi/g	94.50%	1.13E+00	89.30%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

LABORATORY CONTROL SAMPLE

LAB NAME:	**QUANTERRA, Richland**	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D5WCF12S	**MATRIX:**	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
NP-237	4.51E-01	J	8.5E-02	1.3E-01	2.35E-02	pCi/g	100.00%	9.06E-01	49.74%

Number of Results: 1

Result = IDL When Not Detecte

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

Quanterra Analytical Services, Inc

rptChemRadLcs; v3.41

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D1N6R2MW	**MATRIX:**	SOIL

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NP-237	3.28E-01	J	7.3E-02	1.1E-01	1.63E-02	pCi/g	-3.15E-04	8.83E-01	37.10%

Number of Results: 1

*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

Quanterra

MATRIX SPIKE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W02916 / 9619
LAB SAMPLE ID:	D1WKQ1CW	**MATRIX:**	SOIL

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
TOTAL-URANIUM	1.64E+00		0.0E+00	2.7E-01	7.29E-05	ug/g	9.69E-01	8.85E-01	185.73%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

Qualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc

rptChemRadMatrixSpike; v3.41

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9H230V43, J9H308154
Client ID:	PGW
Due Date:	10/21/99
QC Batch Number:	9250237 SDG Number: 2879
Method Test Parameter:	SX-Am
Matrix:	Soil

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

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 11-9-99

Second Level Review: Jackie Waddell Date: 11/10/99

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9H230143
Client ID: BHI
Due Date: 10-21-99
QC Batch Number: 9341244 SDG Number: W92879
Method Test Parameter: Np-237
Matrix: Soil

Review Item	Yes (√)	No (√)	N/A (√)	2nd 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: MS+LCS low recovery Norm
Report these results
11/25/00

First Level Review: Pam Kenitzer Date: 1-20-00
Second Level Review: Jackie Waddell Date: 1/25/00

0043

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9H230143, J9H300152
Client ID:	PGW
Due Date:	10/21/99
QC Batch Number:	9250240 SDG Number: 2874
Method Test Parameter:	SO-RESU
Matrix:	SOIL

Review Item	Yes (√)	No (√)	N/A (√)	2nd 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: D1N6R103 - warm sample

First Level Review: Pam Kronitzer Date: 11-9-99

Second Level Review: Jackie Waddell Date: 11/10/99

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9H230143, J9H300154
Client ID:	PLW
Due Date:	10/21/99
QC Batch Number:	9250242 SDG Number: 2879
Method Test Parameter:	S1-THD30
Matrix:	Soil

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

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 11-10-99

Second Level Review: Jackie Waddell Date: 11/10/99

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9H230143, J9H300154
Client ID:	PGW
Due Date:	10/21/99
QC Batch Number:	9250235 SDG Number: 2879
Method Test Parameter:	SR-UISO
Matrix:	Soil

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

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 11-5-99

Second Level Review: Jackie Waddell Date: 11/9/99

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9H230143 J9H300154, ~~J9H~~ PK 10-15-99 J9I02024				
Client ID: BHI				
Due Date: 10/21/99				
QC Batch Number: 9252236		SDG Number: 2879		
Method Test Parameter: gamma				
Matrix: Soil				
Review Item	Yes (√)	No (√)	N/A (√)	2nd 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: DI NCR 10J recounted - high sample
NCM J00622

First Level Review: Pam Kenitzer Date: 10-15-99

Second Level Review: Jackie Waddell Date: 10/23/99

LS-038, Rev.5, 4/99

Quanterra

Clouseau

Nonconformance Memo

NCM #:	J00622	Classification:	Anomaly
NCM Initiated By:	Pam Kenitzer	Status:	CLOSED
Date Opened:	10/15/99	Production Area:	Environmental - Prep
Date Closed:	11/18/99	Tests:	Gamma by GER-7D
		Lot #'s (Sample #'s):	J9H230143 (1)
		QC Batch:	9252236
Nonconformance:	Other (describe in detail)		
Subcategory:	Other (explanation required)		

Problem Description / Root Cause

Name	Date	Description
Pam Kenitzer	10/15/99	A sample that was duped for the batch had high readings. Dead time was 7%. Samples repacked into smaller geomerty and recounted. Recount agrees with origional count and origional dup count. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Kenitzer	10/15/99	recount

Quality Assurance Verification

Verified By	Due Date	Status	Notes:
Jodie Carnes	N/A	Verified/completed	

Client Notification Summary

Client	Project Manager	Date Notified	Response Date	How Notified
BECHTEL HANFORD, INC.	Doug Swenson	11/18/99	11/18/99	by narrative
	Response	Response Details		
	Process "as-is"			

Approval History

Name	Date Approved:	Position
Pam Kenitzer	10/15/99	Group Leader
Dale OConnell	10/18/99	Group Leader
Doug Swenson	11/18/99	Project Manager
Jodie Carnes	11/18/99	Quality Assurance

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9I423043
Client ID:	PGW
Due Date:	10/21/99
QC Batch Number:	9301411 SDG Number: 2879
Method Test Parameter:	TH-TSR
Matrix:	Soil

Review Item	Yes (√)	No (√)	N/A (√)	2nd 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: This is a reextraction from 9250231 which tech had feared she may have mixed up. Reext. proved it was OK. The next. batch however had a blank-s. switch - Calculated to show correct values NCM J00741

First Level Review: Pam Kenetzer Date: 11-11-99

Second Level Review: Jackie Waddell Date: 11/14/99

LS-038, Rev.5, 4/99

Quanterra

Data Review Checklist
RADIOCHEMISTRY

Lot Number: J9H230143 J9H300154				
Client ID: BHI				
Due Date: 10/21/99				
QC Batch Number: 9250232		SDG Number: W02879		
Method Test Parameter: uranium				
Matrix: water				
Review Item	Yes (√)	No (√)	N/A (√)	2nd Level Review (√)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓	↓
2. Were all sample holding times met?	✓			↓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			↓
C. QC Samples 1. Is the blank yield within acceptance criteria?			✓	↓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			↓
3. Does the blank result meet the Contract criteria?	✓			↓
4. Is the blank result ≤ the Contract Detection Limit?	✓			↓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	↓
6. Is the LCS result within acceptance criteria?	✓			↓
7. Is the LCS yield within acceptance criteria?			✓	↓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			↓
9. Do the MS/MSD results and yields meet acceptance criteria?	✓			↓
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			↓
D. Other 1. Are all Nonconformances included and noted?			✓	↓
2. Are all required forms filled out?	✓			↓
3. Was the correct methodology used?	✓			↓
4. Was transcription checked?	✓			↓
5. Were all calculations checked at a minimum frequency?	✓			↓
6. Were units checked?	✓			↓

Comments on any "No" response: _____

First Level Review: Pam Kenitzer Date: 10-24-99

Second Level Review: Jackie Waddell Date: 10/28/99

LS-038, Rev.5, 4/99

CHAIN OF CUSTODY

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-43	Page 1 of 1

Collector Brent Porter	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** GP-3 <15' bgs 9.5 ~ 10.5		**SAF No.** B99-078	
Ice Chest No. 2071	**Field Logbook No.** EL 1511		**Method of Shipment** Hand Deliver- Govt vehicle	
Shipped To Quanterra Incorporated	**Offsite Property No.** N/A		**Bill of Lading/Air Bill No.** N/A	
Q-27038			**COA** B20CW1 67IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W02916
~~W02879 DB~~ - J9H230143

SAMPLE ANALYSIS

			Preservation	None	Cool 4C	None	None	None	None	Cool 4C	Cool 4C	None	
			Type of Container	P	aG	aG	aG	aG	aG	aG	aG	aG	
			No. of Container(s)	1	1	1	1	1	1	1	1	1	
			Volume	20mL	60mL	60mL	60mL ✓	60mL	60mL	500mL	500mL	1000mL	
				Activity Scan	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	See item (1) in Special Instructions.	Isotopic Uranium	Neptunium-237	pH (Soil) - 9045	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (3) in Special Instructions.	
							*	*				*	
Sample No.	Matrix *	Sample Date	Sample Time										
B0W5P8	Soil	8-19-99	0900	X	X	X	X	X	X	X	X	X	B0W5L6

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/19/99 15:00	B Reifer IB	8/19/99 15:00
REF IB	8 23 99 1000	SOPHIE [illegible]	8 23 99 1000
[illegible] for [illegible]	8/23/99 1430	[illegible]	8-23-99 1430
Relinquished By	Date/Time	Received By	Date/Time
		1200 PM	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.1; Total Cyanide - 9010
(3) Gamma Spectroscopy {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

0052

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel, and the public during transportation accidents. Packaging durability is related to potential hazards of material.
- Low-level radioactive material; very low radiation hazard to people.
- Quantity of material presents low radiation hazard if released from package during accident.
- Some radioactive materials cannot be detected by commonly available instruments.
- Packages do not have RADIOACTIVE I, II, or III labels. Some may have EMPTY labels or may have the word "Radioactive" in the package marking.
- If any radioactive contamination occurs, it will be extremely low level.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.

PUBLIC SAFETY

- CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Priorities for rescue, life-saving, first aid, and control of fire and other hazards are higher than the priority for measuring radiation levels.
- Radiation Authority must be notified of accident conditions, and is usually responsible for radiological decisions.
- Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions.
- Stay upwind.
- Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters protective clothing will provide adequate protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

NAERG96 RADIOACTIVE MATERIALS (LOW LEVEL RADIATION) GUIDE 161

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not change effectiveness of fire control techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fires

- Dry chemical, CO_2, water spray or regular foam.

Large Fires

- Water spray, fog (flooding amounts).

SPILL OR LEAK

- Do not touch damaged packages or spilled material.

Liquid Spills

- Cover with sand, earth or other noncombustible absorbent material.
- Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Apply artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons who contacted released material may be a minor contamination problem to contacted persons, equipment and facilities.
- Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-
LIMITED QUANTITY OF MATERIAL, 7, UN 2910

THIS PACKAGE CONFORMS TO THE CONDITIONS
AND LIMITATIONS SPECIFIED IN 49 CFR
173.421 FOR RADIOACTIVE MATERIAL,
EXCEPTED PACKAGE-LIMITED QUANTITY OF
MATERIAL, UN 2910

U.S. DEPARTMENT OF ENERGY, RICHLAND WA.

By Waste Management Federal Services, Inc.
Northwest Operations
P.O. Box 650, 2355 Stevens Drive
Richland, WA 99352

ERC Radiological Counting Facility
Sample Activity Report - Gross Alpha/Beta

RCF6358

Sample Run ID: LB55 15min Unk 4-in Pu-Sr - 199908191538 **Project/Cust. ID:** 200-CW-1 B0W5L6

Machine LB5500 **Report Date:** Thursday, August 19, 1999 **SAF #** B99-078

Sample ID	Carrier	Sample Type	Sample Volume/Mass	Acquistion Date/Time
19990819153859	12	20mL Vial	1328 mg	8/19/99 3:39:11 PM

Net Alpha cpm	Alpha dpm	Aplha dpm 2 sigma	Alpha Bkgd cpm	Net Beta cpm	Beta dpm	Beta dpm 2 sigma	Beta Bkgd cpm
7.272	~~8.201~~ 20.8	93.735	1.042	5536.514	10408.647	318.491	9.294

Alpha MDA	Beta MDA
8.931	5568.145

Beta Efficiency: 53.19%

Alpha Efficiency: 35.01%

$$\frac{(c)}{(\alpha)} \quad \frac{5536.514}{0.6319} = \frac{10408\ d/m}{2.22\ (pCi)\ 1.328\ (wt)} = 3.530\ pCi/gm\ \beta^-$$

$$\frac{(c)}{(\alpha)} \quad \frac{7.272}{0.3501} = \frac{20.8\ d/m}{2.22\ (pCi)\ 1.328\ g\ (wt)} = 7\ pCi/gm.$$

Samples Analyzed By: [signature] **Date:** 8-19-99

Samples Reviewed By: [signature] **Date:** 8-19-99

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6358

Sample Date & Time 8/19/99 0900

Project ID: 200-CW-1 SAF Number: B99-078 Date Analyzed 8/19/99 3:58:5

Sample ID: B0W5L6

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	8.7E+01			8.7E+01
Co-60	<	1.1E+01			1.1E+01
Cs-137		5.6E+03	+/-	4.3E+02	1.9E+01
Eu-152	<	5.2E+01			5.2E+01
Eu-154	<	2.5E+01			2.5E+01
Eu-155	<	3.5E+01			3.5E+01
Th-232D	<	3.5E+01			3.5E+01
Th-234	<	1.6E+02			1.6E+02
U-235	<	8.7E+01			8.7E+01
U-238	<	1.4E+03			1.4E+03
U-238D	<	2.9E+01			2.9E+01
Am-241	<	2.1E+01			2.1E+01

Total GEA (pCi/g) 5.6E+03 +/- 4.3E+02

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

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

Analyst T. J. Snider 8/19/99

Report To Dave St. John

Fax 372-9487

Report Printed: Thursday, August 19, 1999

CH2MHILL SUBJECT 200-CW-1 Test Pits BY

Sample No. 130W5P8 SHEET NO. 1 of 1 DATE 8/23/99

RCF # B0W5L6 PROJECT NO. B99-078

Quanterra

weight

(2320 ml's)(1.7 gms/ml) = 3,944 gms

Have

Cs-137 5.6×10^{3} pCi/gm = 5.6×10^{-9} Ci/gm ⇒ 2.2×10^{-5} Ci

⇒ 8.15×10^{-7} TBq

Allowed

	A_1	A_2 (10^{-3})
Cs-137	13.5 Ci	1.35×10^{-2} Ci

Have vs Allowed

total have (2.2×10^{-5} Ci) < Allowed (1.35×10^{-2} Ci)

∴ Ltd Qty

RADIOACTIVE SHIPMENT RECORD

106608 3.

Page 1 of 2

1. SHIP FROM U.S. DEPT. OF ENERGY C/O

Company: Bechtel Hanford Inc
Address: 3728 Building, 300-Area
City, State, Zip: Richland, WA 99352
Contact: David St. John
Phone: 1-509-372-9588

4. Ship: [X] Prepaid [ ] Collect

Via: [X] Motor [ ] ~~Air Psgr~~ [ ] UPS [ ] Rail [ ] Air Cargo [ ] Site Carrier

SHIPMENT AUTHORIZATION NUMBER

2. SHIP TO

Company: Quantera
Address: 2800 George Washington Wy.
City, State, Zip: Richland, WA 99352
Attention: Karen Ackenburg
Phone: 1-509-375-3131

Markings Applied 6.
- [ ] Radioactive - LSA
- [ ] Radioactive - SCO
- [ ] Type A
- [ ] Type B with trefoil

LSA Description 8.
- [ ] LSA-I
- [ ] LSA-II
- [ ] LSA-III
- [ ] SCO-I
- [ ] SCO-II

Labels Applied 10.
- [ ] Empty
- [ ] Radioactive White - I
- [ ] Radioactive Yellow - II
- [ ] Radioactive Yellow - III
- [ ] Subsidiary Hazard

7. For Normal Form only Identify
- Physical Form: [ ] Liquid [ ] Gas [X] Solid soil
- Chemical Form: [X] Elemental [ ] Metal [ ] Nitrate [ ] Oxide [ ] Mixture [ ] Other

EMERGENCY RESPONSE 9.
- Telephone: 1-888-766-0771
- Emergency Response Guide(s): 161

- [ ] Highway Route Controlled Quantity
- [ ] Exclusive Use Shipment with instructions
- [ ] Placards Applied
- If Rail Specify:
- Fissile Excepted, Grams
- [X] Excepted Package Statement

5. HM Proper Shipping Name: Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	Surface Contaminated Object	7	UN2913

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than N/A Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11. No. Pkg.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	~~Bq~~ TBq/Package	Gr. Wt. Kg.
1	poly cooler	Strongtight	2071	Tape	Cs-137	N/A	8.2×10^{-7}	14 kg
	glass sample containers wrapped in bubble wrap and in double poly bags packed in wet ice 4000 gms total							
(Shipper may describe package in detail on one of the unused lines above)					TOTALS	N/A	8.2×10^{-7}	14 kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Certifier's Signature: David St. John — On behalf of DOE-RL — Date: 8/23/99 — Organization: ERC-AFS — Complete Cost Code (Inc. End Function): R20CW1 671C

13. Surface Dose Rate of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Dose Rate @ 1 Meter from Surface of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Smears of Outer Container: [X] <0.41 Bq (22 dpm) ß γ /cm²; [X] <0.04 Bq (2.2 dpm) α /cm²; [ ] <Tbl. 2-2 HSRCM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <2 mSv/hr (200 mrem/hr); @ 2 meters [X] <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper [X] <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: B Mercer — Bldg. 3728 — Survey No. FF2.99.1273 — Date 8.23.99

14. TRANSPORTER — Vehicle Number: 6L3-30345 — DRIVER SIGNATURE: M.G. Bucher

RECEIVER — RECEIVER SIGNATURE: [signature] — Date 8-23-99

15. OFFSITE AUTHORIZATION

Shipment has been inspected and verified to be in compliance with DOT regulations

Authorized Signature: [signature] — Printed Name: Keith R. Smith — Date 8-23-99

16. AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION: [X] N/A

CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied

PASSENGER AIRCRAFT: [X] Ltd Qty [X] ~~Research/Medical Diagnosis~~ [ ] <3 T.I. [ ] Human Medical Research

Pkg. Dimensions (cm)

17. OFFSITE AUTHORIZATION

Tracking No.	Date Shipped	Routing	ETA
RMBH 3651	8-23-99	BHF Vehicle	8-23-99
Surveyed By	**Date**	**Approved for Shipment Offsite**	**Date**
		[signature]	8-23-99

0057

54-6000-088 (06/97)

Figure 1

SAMPLE CHECK-IN LIST W02916

Date/Time Received: 8/23 1430 SG#: ~~W02879~~ 03

Work Order Number: J9H230143 SAF #: B99-078

Shipping Container ID: 2071 Chain of Custody # B99-078-43

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 5°
5. Vermiculite/packing materials is Wet [ ] Dry [ ]
6. Number of samples in shipping container: 9
7. Sample holding times exceeded? Yes [ ] No [ ]

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

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

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

Sample Custodian/Laboratory: [signature] Date: 8-23-99

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

24-Aug-99

(R) 8/24/99

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B0W5P8		8/24/99 10:05:00 AM	QUAD21C	8/24/99 3:09:32 PM	B0W5P8	30	424	13.98333333	28917	962.86375
	D1N6R	SOLID		Bkg:	8/24/99 5:49:46 AM	BKG	800	120	0.15	829	1.03625

Anl Date:	8/24/99	Tot Sa, Alq:	8.04E+02	, 8.30E+01	Alp;	(Dpm/	2.20E+01	(uCi/	9.60E-02	(pCi/	1.19E+02	± 1.2E+01	CAT	4.2E-01	Lab
Ppt mg:	83	Units:	g	, mg	Bet;	Alq):	2.11E+03	Sa):	9.22E+00	L|g):	1.15E+04	± 6.7E+01	III	8.7E-03	Alq L|g

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-101	Page 1 of 1

Collector Bowers/Porter/Nielson	**Company Contact** Chris Cearlock **Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** GP-8 <15' bgs	**SAF No.** B99-078	
Ice Chest No. ERC 96-082	**Field Logbook No.** EL-1511	**Method of Shipment** gov vehicle	
Shipped To Quanterra Incorporated Richland	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
Q-27038		COA B20CW1 67IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W02916 ~~W02879~~ DB 8-30-99 JA H300154

SAMPLE ANALYSIS

Preservation	Cool 4C	None	None	None	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	60mL	60mL	500mL	500mL	1000mL			
	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (1) in Special Instructions.	Isotopic Uranium	pH (Soil) - 9045	See item (2) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
~~B0W8B1~~	~~Soil~~	~~8-27-99~~	~~0748~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~		~~B0WJL8~~
B0W8B1	Soil	8-27-99	0748			X				X		
DIWKQ												

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/27/99 1300	Refer LB	8/27/99 1300
R of ID	8-30-99/1130	Chris	8/30/99 11:30
~~Chris~~	~~8/30/99 1100~~		
Doug Bowers	8-30-99/1241	Lawrence Schuler	8-30-99 1241

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.1; Total Cyanide - 9010

(3) Gamma Spectroscopy {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

LABORATORY SECTION	Received By	Title 2180 CRM	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6360

Sample Date & Time 8/19/99 1050

Project ID: 200-CW-1 **SAF Number:** B99-078 **Date Analyzed** 8/19/99 6:02:0

Sample ID: B0W5L8

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	7.3E+01			7.3E+01
Co-60	<	6.1E+00			6.1E+00
Cs-137	<	6.9E+00			6.9E+00
Eu-152	<	1.6E+01			1.6E+01
Eu-154	<	2.3E+01			2.3E+01
Eu-155	<	1.5E+01			1.5E+01
Th-232D		1.5E+01	+/-	1.2E+01	1.3E+01
Th-234	<	7.8E+01			7.8E+01
U-235	<	3.2E+01			3.2E+01
U-238	<	9.9E+02			9.9E+02
U-238D	<	1.1E+01			1.1E+01
Am-241	<	9.3E+00			9.3E+00

Total GEA (pCi/g)	1.5E+01	+/-	1.2E+01

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

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

Analyst T. J. Snider 8/19/99

Report To Dave St. John **Fax** 372-9487

Report Printed: Thursday, August 19, 1999

Figure 1

SAMPLE CHECK-IN LIST

W02916

Date/Time Received: 8-30-99 1241 SG#: W02879 DB.

Work Order Number: J9H300154 SAF #: B99-070

Shipping Container ID: ERC96-082 Chain of Custody # B99-078-101

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 NA
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: K. Aldenlu Date: _____

Telephoned To: _____ On _____ By _____

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-111	Page 1 of 1

Collector Bowers/Porter/Nielson	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200CW1 GP-12		**SAF No.** B99-078
Ice Chest No. ERC 96-082	**Field Logbook No.** EL-1511		**Method of Shipment** gov vehicle
Shipped To Quanterra Incorporated RICHLAND	**Offsite Property No.** N/A		**Bill of Lading/Air Bill No.** N/A
			COA B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Q-27038

Special Handling and/or Storage

Preservation	Cool 4C	None										
Type of Container	aG	aG										
No. of Container(s)	1	1										
Volume	60mL	1000mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.										

Site W02916 ~~W02879~~ 02 J9T020241

Sample No.	Matrix *	Sample Date	Sample Time										
B0W9H9 D237K	Soil	9-1-99	0710	~~X~~	X				Bow5L8				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	9-1-99/1200	RF 1B	9-1-99/1200
RF #1B	9/2/99 1230	R. Nielson	9/2/99 1300
R. Nielson	9/2/99 1450	BW Kay	9/2/99 1450

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

ORIGINAL

ERC Radiological Counting Facility Analysis Report

RCF Number RCF6360

Sample Date & Time 8/19/99 1050

Project ID: 200-CW-1 **SAF Number:** B99-078 **Date Analyzed** 8/19/99 6:02:0

Sample ID: B0W5L8

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40	<	7.3E+01			7.3E+01
Co-60	<	6.1E+00			6.1E+00
Cs-137	<	6.9E+00			6.9E+00
Eu-152	<	1.6E+01			1.6E+01
Eu-154	<	2.3E+01			2.3E+01
Eu-155	<	1.5E+01			1.5E+01
Th-232D		1.5E+01	+/-	1.2E+01	1.3E+01
Th-234	<	7.8E+01			7.8E+01
U-235	<	3.2E+01			3.2E+01
U-238	<	9.9E+02			9.9E+02
U-238D	<	1.1E+01			1.1E+01
Am-241	<	9.3E+00			9.3E+00

Total GEA (pCi/g)	1.5E+01	+/-	1.2E+01

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

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

Analyst T. J. Snider 8/19/99

Report To Dave St. John

Fax 372-9487

Report Printed: Thursday, August 19, 1999

Figure 1

SAMPLE CHECK-IN LIST W02916

Date/Time Received: 9/2/99 1450 SG#: ~~W02879~~ DB.

Work Order Number: J9I020241 SAF #: B99-078, B99-005

Shipping Container ID: ERC 96-082 Chain of Custody # B99-078-111, 005-044

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 4°
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? Yes [ ] No [ ]

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

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

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

Sample Custodian/Laboratory: BWKent Date: 9/2/99

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

03-Sep-99

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0W639D237M		9/3/99 7:57:00 AM	QUAD21A	9/3/99 11:45:36 AM	B0W639D237M	30	8	0.142916667	62	1.07416667
D237M	SOLID		Bkg:	9/3/99 4:03:29 AM	BKG	800	99	0.12375	794	0.9925

Anl Date: 9/3/99	Tot Sa, Alq: 1.84E+03	, 1.18E+02	Alp;	(Dpm/ 1.00E+00	(uCi/ 7.03E-03	(pCi/ 3.83E+00	± 4.8E+00	CAT I	1.3E+01	Lab Alq L|g
Ppt mg: 117.7	Units: g	, mg	Bet;	Alq): 2.43E+00	Sa): 1.71E-02	L|g): 9.29E+00	± 2.4E+00		1.1E+01	

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI B0W9H9D237K		9/3/99 7:57:00 AM	QUAD21B	9/3/99 11:45:36 AM	B0W9H9D237K	30	12	0.3	64	1.23583333
D237K	SOLID		Bkg:	9/3/99 4:03:29 AM	BKG	800	80	0.1	718	0.8975

Anl Date: 9/3/99	Tot Sa, Alq: 1.84E+03	, 1.09E+02	Alp;	(Dpm/ 2.14E+00	(uCi/ 1.63E-02	(pCi/ 8.87E+00	± 5.1E+00	CAT II	5.6E+00	Lab Alq L|g
Ppt mg: 108.6	Units: g	, mg	Bet;	Alq): 2.61E+00	Sa): 1.99E-02	L|g): 1.08E+01	± 2.5E+00		9.2E+00	

Reviewed 9/3/99

Quanterra

COC Signature Page

WO2879

Lot or Batch #: 9250237	Initials/Date	Procedure #
Released By	9-9-99	P. Polar RC0008
Received	9-9-99	R.L.L. RC5013/5017
Released By	9-10-99	n/a
Received	SK 9/10/99	RC5019
Released By	10-25-99	n/a
Received	10/25/99	RC5080
Released By	11.05.99	n/a
Received	11/5/99	RC5003
Released By	11/5/99	n/a
Received	11/5/99	RCMD5W8R1
Released By	11/8/99	n/a
Received	PK 11-8-99	RCHRC0007
Released By	PK 11-9-99	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/07/99
Time: 12:18:54

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

****
* QC BATCH: 9250237 *
****

WO 2879

Prep Dt/Tm/Person:	9/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

SX: Americium-241 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
10/21/99	J9H230143-001 **D1N6R-1-04**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-0DX**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-04**	SOLID									1	pCi/g
0/00/00	J9I070000-237 **D261N-1-01B X**	SOLID									1	pCi/g
0/00/00	J9I070000-237 **D261N-1-02C M**	SOLID									1	pCi/g
0/00/00	J9I070000-237 **D261N-1-03B**	SOLID									1	pCi/g
0/00/00	J9I070000-237 **D261N-1-04C**	SOLID									1	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 7

Seq. Analysis Pu

QC Batch # 9250240

0068

Quanterra

COC Signature Page

W02879

Lot or Batch #: 9341244

	Initials/Date	Procedure #
Released By	JN 12/6/99	RICHRC0002/2
Received	SK 12/6/99	RC5019-1
Released By	SK 12/22/99	n/a
Received	12-22-99 DM	RICHRC 5009 RO
Released By	DM 1-4-00	n/a
Received	SD 1/4/00	RC 5003-2
Released By	SD 1/7/00	n/a
Received	CO 1/7/00	RICHRDOOOSR1
Released By	CO 1/8/00	n/a
Received	JM 1-10-00	RADcalc v2.4
Released By	JM 1-10-00	n/a
Received	PK 1-10-00	
Released By	PK 1-20-00	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

Run Date: 12/07/99
Time: 11:00:41

Page: 1

****
* *
* QC BATCH: 9341244 *
* *
****

W02879

SW: Neptunium-237 by Alpha Spec
9L: Np PrpRC5013/RC5019, SepRC5009(5003)
5I: CLIENT: HANFORD

Analytical Due Date: 0/00/00
Project Manager: DES

Lot# Work Order	Client	Analyt Matrix	Due Aliquot	Client Name Geometry	Count Time	Mid/Ave Date/Time		Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
J9H230143-001 S D1N6R-2-0M Comments:	SOIL SOIL		0/00/00	Bechtel Hanford, .0000	.000	8/19/99	9:00			pCi/g	**NYS 55-8/99	**NYS	DES
J9H230143-001 X D1N6R-2-0N Comments:	SOIL SOIL		0/00/00	Bechtel Hanford, .0000	.000	8/19/99	9:00		1	pCi/g	**NYS 55-8/99	**NYS	DES
J9H230143-001 D1N6R-3-08 Comments:	SOIL SOIL		0/00/00	Bechtel Hanford, .0000	.000	8/19/99	9:00		1	pCi/g	**NYS 55-8/99	**NYS	DES
J9L070000-244 B D5WCF-1-01 Comments:	SOLID		0/00/00	Bechtel Hanford,		8/19/99	9:00		1	pCi/g	**NA	**NA	DES
J9L070000-244 C D5WCF-1-02 Comments:	SOLID		0/00/00	Bechtel Hanford,		8/19/99	9:00		1	pCi/g	**NA	**NA	DES

Total Number of Samples In Batch: 00005

Batch Information: Dry Wt: Decay Correct: Y Blank Sub: None Call In:

Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL		Tracer Yield	Type	QC Control Limits
Neptunium 237	1		RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0070

Quanterra

DUE DATE 10/21/99

*** RE-EXTRACTION REQUEST ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

CUSTOMER BHI

MATRIX Soil

ANALYSIS Np237 W02879

SAMPLE DELIVERY GROUP J9H230143

OLD BATCH NUMBER 9313409 (9250229)

NEW BATCH NUMBER ~~N/A~~ 9341244
RW 12/7/99

LAB SAMPLE ID	CUSTOMER ID	COMMENTS
1) DINGR208		
2) DINGR10N		
3) DINGR10M	— sep funnel broken/sample lost (MS) on reanalysis batch.	
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		

LAB QC ID		
BLANK) assign.		
SPIKE) new		

RC-048 1/99 REV 4

Quanterra

COC Signature Page

W02879

Lot or Batch #: 9250240

	Initials/Date	Procedure #
Released By	9-9-99	Richrc0009
Received	9-9-99	Rich RC 5013
Released By	9-10-99	n/a
Received	SK 9/10/99	RC5019
Released By	10-25-99	n/a
Received	10/25/99	RC5080
Released By	11.04.99	n/a
Received	11-6-99	RC5039
Released By	11-6-99	n/a
Received	11/6/99	RICHRD000 8REV1
Released By	11/8/99	n/a
Received	PK 11-8-99	RICHRC0002
Released By	PK 11-9-99	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/07/99
Time: 12:21:11

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

****
* *
* **QC BATCH: 9250240** *
* *
****

W02879

Prep Dt/Tm/Person:	9/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

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
10/21/99	J9H230143-001 **D1N6R-1-03**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-0EX**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-03**	SOLID									1	pCi/g
0/00/00	J9I070000-240 **D261P-1-01B X**	SOLID									1	pCi/g
0/00/00	J9I070000-240 **D261P-1-02C M**	SOLID									1	pCi/g
0/00/00	J9I070000-240 **D261P-1-03B**	SOLID									1	pCi/g
0/00/00	J9I070000-240 **D261P-1-04C**	SOLID									1	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 7

Seq. Analysis Am

QC Batch # 9250237

0073

Quanterra

COC Signature Page

WO2879

Lot or Batch #: 9250242	Initials/Date	Procedure #
Released By	9-9-99	Richrc0009
Received	9-9-99	RC 5013/5017
Released By	9/10 99	n/a
Received	~~10-21-99~~ 9-10-99	RICHRC5019
Released By	10-21-99	n/a
Received	10-21-99	RC 5011
Released By	10-29-99	n/a
Received	11-5-99	RC5003
Released By	11-5-99	n/a
Received	11/5/99	RICHRD0002
Released By	11/8/99	n/a
Received	PK 11-9-99	RICHRC0002
Released By	PK 11-10-99	n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/07/99
Time: 12:22:43

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

****
* QC BATCH: 9250242 *
****

W02879

Prep Dt/Tm/Person: 9/07/99 0
Sep1 Dt/Tm/Person: 0/00/00 000000
Sep2 Dt/Tm/Person: 0/00/00 000000
Cocktail Date/Time: 0/00/00

S1: Thorium-228,230,232 by Alpha Spec
9R: ThIso PrpRC5013/RC5019, SepRC5011(5003)
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
10/21/99	J9H230143-001 **D1N6R-1-0GX**	SOLID									1	pCi/g
10/21/99	J9H230143-001 **D1N6R-1-09**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-07**	SOLID									1	pCi/g
0/00/00	J9I070000-242 **D261Q-1-01B**	SOLID									1	pCi/g
0/00/00	J9I070000-242 **D261Q-1-02C**	SOLID									1	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0075

Quanterra

COC Signature Page

W02879

Lot or Batch #: 9250235

	Initials/Date	Procedure #
Released By	9-9-99	RichRC0009
Received	9-9-99	RC 5013
Released By	9-10-99	n/a
Received	SK 9/10/99	RC5019
Released By	10-21-99	n/a
Received	10-21-99	RC 5079
Released By	10-27-99	n/a
Received	N 10/30/99	RC5039/2
Released By	11-2-99	n/a
Received	11/2/99	RICHRO0008R1
Released By	11/5/99	n/a
Received	11-5-99	RICHRC0002
Released By	11-5-99	n/a
Received		

1st ext JW 10/30/99

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/07/99
Time: 12:16:16

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

****
* *
* QC BATCH: 9250235 *
* *
****
W02879

Prep Dt/Tm/Person:	9/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

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
10/21/99	J9H230143-001 **D1N6R-1-0FX**	SOLID									1	pCi/g
10/21/99	J9H230143-001 **D1N6R-1-01**	SOLID									1	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-01**	SOLID									1	pCi/g
0/00/00	J9I070000-235 **D261L-1-01B**	SOLID									1	pCi/g
0/00/00	J9I070000-235 **D261L-1-02C**	SOLID									1	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 5

0077

Quanterra

COC Signature Page

Lot or Batch #: 9252236	Initials/Date	Procedure #
Released By	9-10-99	RichRC0009
Received	9-10-99	RichRC5013/5017
Released By	9-10-99	n/a
Received	9/13/99	RICHR00007
Released By	10-1-99	~~RIC 10/1/99~~ n/a
Received	PK 10-1-99	RICHRC0002
Released By	PK 10-15-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/09/99
Time: 11:06:13

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

****
* QC BATCH: 9252236 *
****

Prep Dt/Tm/Person:	9/09/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

T8: Gamma by HPGE 7 day ingrowth 9/13
AW: Gamma PrpRC5017 9/13
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
10/21/99	J9H230143-001 **D1N6R-1-0J**	SOLID									--	pCi/g
10/21/99	J9H230143-001 **D1N6R-1-0KX**	SOLID									--	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-0F**	SOLID									--	pCi/g
10/21/99	J9I020241-001 **D237K-1-01**	SOLID									--	pCi/g
0/00/00	J9I090000-236 **D28FW-1-01B**	SOLID									--	pCi/g
0/00/00	J9I090000-236 **D28FW-1-02C**	SOLID									--	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 6

0079

Quanterra

COC Signature Page

9301411

Lot or Batch #: J9H230143 J9H300154

	Initials/Date	Procedure #
Released By	PK 10-20-99	RICHRC0002
Received	[illegible] 11-1-99	RICHRC5013-2
Released By	SK 11/3/99	n/a
Received	[illegible] 11-3-99	RICHRC5006.2
Released By	[illegible] 11-8-99	n/a
Received	[illegible] 11/9/99	RICHR00003
Released By	CS 11/10/99	n/a
Received	PK 11-10-99	RICHRC0002
Released By	PK 11-11-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Parent Batch:
Associated Batches:
:
:
:
:

Quanterra Incorporated
Information Sheet Rad Prep

****
* *
* QC BATCH: 9301411 *
* *
****

Run Date: 10/28/99
Time: 17:26:02

TH: Total Strontium by GPC
CH: Sr-Total PrpRC5013, SepRC
5I: CLIENT: HANFORD

Analytical Due Date: 0/00/00
Project Manager: DES

	Lot# Work Order	Client	Analyt Matrix	Due	Client Name Aliquot	Geometry	Count Time	Mid/Ave Date/Time		Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
	J9H230143-001 X D1N6R-1-0L Comments:	SOIL SOIL	0/00/00		Bechtel Hanford, .0000		.000	8/19/99	9:00		1	pCi/g	**OTHER 55-8/99	**OTHER	DES
++	J9H230143-001 D1N6R-2-02 Comments:	SOIL SOIL	0/00/00		Bechtel Hanford, .0000		.000	8/19/99	9:00		1	pCi/g	**NYS 55-8/99	**NYS	DES
++	J9H300154-001 D1WKQ-2-02 Comments:	SOIL SOIL	0/00/00		Bechtel Hanford, .0000		.000	8/27/99	7:48			pCi/g	**NYS 57-8/99	**NYS	DES
	J9J280000-411 B D49FC-1-01 Comments:	SOLID	0/00/00		Bechtel Hanford,			8/19/99	9:00			pCi/g	**NA	**NA	DES
	J9J280000-411 C D49FC-1-02 Comments:	SOLID	0/00/00		Bechtel Hanford,			8/19/99	9:00		1	pCi/g	**NA	**NA	DES

Total Number of Samples In Batch: 00005

Batch Information: Dry Wt: Decay Correct: Y Blank Sub: None Call In:

Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL		Tracer Yield		Type	QC Control Limits
Strontium 90	1	Strontium Trace	(020-105)	RPD	

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.

0081

Quanterra

COC Signature Page

W0287

Lot or Batch #: 9250232

	Initials/Date	Procedure #
Released By	RH 9-9-99	Rich RC0009
Received	WP 9-9-99	Rich RC 5013 5017
Released By	WP 9-10-99	n/a
Received	SK 9/10/99	RC5013
Released By	SK 10/19/99	n/a
Received	BAB 10-22-99	RICH RC 5058 R1
Released By	BAB 10-22-99	n/a
Received	PK 10-22-99	RICHRC0002
Released By	PK 10-25-99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev.1, 6/99

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 9/07/99
Time: 12:14:57

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

****
* QC BATCH: 9250232 *
****

W02879

Prep Dt/Tm/Person:	9/07/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

SS: Total Uranium by KPA
DS: Unat Laser PrpRC5013, SepRC5015
5J: RCH: BATTELLE ENVIRONMENTAL

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
10/21/99	J9H230143-001 **D1N6R-1-0A**	9250077 SOLID									1.00E-02	pCi/g
10/21/99	J9H230143-001 **D1N6R-1-0EX**	9250077 SOLID									1.00E-02	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-0CS**	9250077 SOLID									1.00E-02	pCi/g
10/21/99	J9H300154-001 **D1WKQ-1-08**	9250077 SOLID									1.00E-02	pCi/g
0/00/00	J9I070000-232 **D261H-1-01B**	SOLID									1.00E-02	pCi/g
0/00/00	J9I070000-232 **D261H-1-02C**	SOLID									1.00E-02	pCi/g

NUMBER OF WORK ORDERS IN BATCH: 6

0083

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

October 14, 1999

Attention: Joan Kessner

OCT 1999
RECEIVED
Data
Log In

Project Number	:	550.267
SDG	:	W02916
Number of Samples	:	One (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	September 2, 1999

II. Introduction

On September 2, 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 9/03/99 at a temperature of 5 degrees C. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID:

St. Louis ID	BHI ID	SAF ID	Matrix	Date of Receipt
22042-001	B0W9H9	B99-078	SOIL	02-SEP-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 - 6010A
Mercury - 7471
Chromium Hex - 7196

Deviation from Request: None

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.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

V. Comments

General:

The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

This SDG was originally given the SDG number W02869. Because samples for this SDG were also being analyzed at Quanterra, Richland, the SDG has been changed to W02916 to match the data being reported by Richland.

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.

There are no comments or non-conformances associated with this data.

Wet Chemistry:

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

There was insufficient sample volume available to analyze a Matrix Spike for the Hexavalent Chromium at full volume. The MS was prepped at half volume and the extract volume was then adjusted to 100ml. The recovery was within QC limits.

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:

Sheila Lowrie for Marti Ward

Marti Ward
St. Louis Project Manager

Quanterra St. Louis

Sample Preparation Methods

"Quanterra Standard" Preparation Method Used Unless Otherwise Noted

Organic Preparation Methods	**Matrix**	**Analysis**	**SW846 Reference**
Separatory Funnel Liquid-Liquid ***(Quanterra Standard)***	Liquid	Pesticides, PCBs, Semivolatiles, TPH (Diesel Range Organics), Herbicides, TCLP (Semivolatiles, Pesticides, Herbicides), Phenols, PAHs,	3510C
Continuous Liquid-Liquid	Liquid	Pesticides, Semivolatiles	3520C
Ultrasonic ***(Quanterra Standard)***	Solid	Pesticides, PCBs, Semivolatiles, Herbicides, PAHs	3550B
Pressurized Fluid Extraction	Solid	Pesticides, PCBs, Semivolatiles, PAHs	3545
Waste Dilution ***(Quanterra Standard)***	Solvent/Oil	Pesticides, PCBs, Semivolatiles, TPH, Herbicides, TCLP (Semivolatiles, Pesticides, Herbicides)	3580A
Purge and Trap ***(Quanterra Standard)***	All	Volatiles, Gasoline Range Organics	5030B
Toxicity Characteristic Leaching Procedure ***(Quanterra Standard)***	All	Pesticides, Semivolatiles, Herbicides, Volatiles, Metals	1311
Inorganic Preparation Methods	**Matrix**	**Analysis**	**SW846 Reference**
Acid Digestion ***(Quanterra Standard)***	Liquid	ICP or FLAA Metals	3010A
Acid Digestion – Total Recoverable	Liquid	ICP or FLAA Metals	3005A
Acid Digestion ***(Quanterra Standard)***	Liquid	GFAA Metals	3020A
Acid Digestion ***(Quanterra Standard)***	Solid	ICP, FLAA, or GFAA Metals	3050B

W02869

Quanterra September 08, 1999 08:43 am
Account: 10722 Project: 550.267 Quanterra-Richland QAS No. 550.267 Rev. 0
Master Sample Login: 22042

Project Manager: S. Louvier

Reviewed by and Date: JSmith 9-8-99

Sample Header Template:

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No. / (Container Numbers:% Filled)
Comments / Data:								
22042-001	B0W9H9	Soil	01-SEP-99 07:10	02-SEP-99 13:00	01-OCT-99	AIRBORNE	3*	R9132-001
SAF B99-078// ICAP: See QAS for list.								
1	AN - Amber Glass-120ML	CR6/7196/Q4	S	COLD	24-SEP-99	02-SEP-99	R1D	(459552:100)
1		HG/7471/Q4	S	COLD	24-SEP-99	29-SEP-99	R1D	(459552:100)
1		ICAPT/6010A/Q4	S	COLD	24-SEP-99	28-FEB-00	R1D	(459552:100)
1		PM/IT/Q4	S	COLD	24-SEP-99	28-FEB-00	R1D	(459552:100)
1		RAD/CSCREEN/Q4	S	COLD	24-SEP-99	01-MAR-00	R1D	(459552:100)
22042-001DUP	B0W9H9	Soil	01-SEP-99 07:10	02-SEP-99 13:00	01-OCT-99	AIRBORNE	3*	R9132-001
SAF B99-078								
1	AN - Amber Glass-120ML	CR6/7196/Q4	S	COLD	24-SEP-99	02-SEP-99	R1D	(459552:100)
22042-001MS	B0W9H9	Soil	01-SEP-99 07:10	02-SEP-99 13:00	01-OCT-99	AIRBORNE	3*	R9132-001
SAF B99-078// ICAP: See QAS for list.								
1	AN - Amber Glass-120ML	CR6/7196/Q4	S	COLD	24-SEP-99	02-SEP-99	R1D	(459552:100)
1		HG/7471/Q4	S	COLD	24-SEP-99	29-SEP-99	R1D	(459552:100)
1		ICAPT/6010A/Q4	S	COLD	24-SEP-99	28-FEB-00	R1D	(459552:100)
22042-001MSD	B0W9H9	Soil	01-SEP-99 07:10	02-SEP-99 13:00	01-OCT-99	AIRBORNE	3*	R9132-001
SAF B99-078// ICAP: See QAS for list.								
1	AN - Amber Glass-120ML	HG/7471/Q4	S	COLD	24-SEP-99	29-SEP-99	R1D	(459552:100)
1		ICAPT/6010A/Q4	S	COLD	24-SEP-99	28-FEB-00	R1D	(459552:100)

3*-Sample has not been rad screened.

000005

Bechtel Hanford Inc.	W028669	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-111	Page 1 of 1

Collector Bowers/Porter/Nielson	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200CW1 GP-12		**SAF No.** B99-078	
Ice Chest No. 99-159	**Field Logbook No.** EL-1511		**Method of Shipment** ~~gov vehicle~~ RW 9/2/99 FED EX	
Shipped To Quanterra Incorporated ST. LOUIS	**Offsite Property No.** A990242		**Bill of Lading/Air Bill No.** 423579529079	
			COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions. 100% field	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time									
B0W9H9	Soil	9-1-99	0710	X	~~X~~	~~N/D 9299~~			BOW5L8			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	9-1-99/1200	Ref 1B	9-1-99/1200
REF 1B 9299	1300	SJ GALE	9299 1300
SJ GALE	9299 1300	FED EX	
Fed Ex 9-3-99	JCS 9-7-99		9/3/99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

COLLECTOR UNAVAILABLE TO SIGN COC.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

CC0006

Quanterra
Environmental Services

019607

Login No.: 22042
W028669

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 9/3/99 Time: 0900
Project No: 550.267
Initiated by: [illegible]
Shipper/No: FED X 453579529079
RFA/COC Numbers: B99-078-111

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/not tamper evident type (circle all that apply).
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°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: _____

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: (or designate) [signature] Date: 9/3/99

Project Management Review: Jennifer Smith Date: 9-7-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 6/29/99

000007

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 09/01/99
Receipt Date : 09/02/99
Report Date : 10/01/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W9H9	22042-001	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.017	MG/KG	U	0.036	1
B0W9H9	22042-001MS	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	123	%REC			1
B0W9H9	22042-001MSD	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	125	%REC			1
NA	QCLCS206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	109	%REC			2
NA	QCBLK206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.017	MG/KG	U	0.033	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W9H9

Sample Date : 09/01/99
Receipt Date : 09/02/99
Report Date : 10/01/99

Quanterra ID : 22042-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	2.2	MG/KG		1.1	1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	73.7	MG/KG		21.8	1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	0.25	MG/KG	B	0.54	1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	0.03	MG/KG	U	0.54	1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	9.3	MG/KG		1.1	1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	14.4	MG/KG		2.7	1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	4.2	MG/KG		0.33	1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	9.7	MG/KG		4.4	1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	0.42	MG/KG	U	0.54	1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	0.08	MG/KG	U	1.1	1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	25.7	MG/KG		5.4	1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	33.9	MG/KG		2.2	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W9H9

Sample Date : 09/01/99
Receipt Date : 09/02/99
Report Date : 10/01/99

Quanterra ID : 22042-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	94	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	97	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	102	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	85	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	95	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	99	%REC			1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	88	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	90	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	95	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Sample Date : 09/01/99
Receipt Date : 09/02/99
Report Date : 10/01/99

Client ID: B0W9H9

Quanterra ID : 22042-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	96	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	101	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	84	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	94	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	98	%REC			1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	90	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	87	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	89	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	94	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1

Data is incomplete without Case Narrative

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.267___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W02869_____

SOW No.: SW846

EPA Sample No.	Lab Sample ID
B0W9H9	22042-001
B0W9H9SD	22042-001SD
B0W9H9S	22042-001S

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:

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: _____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0W9H9

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02869

Matrix (soil/water): SOIL Lab Sample ID: 22042-001

Level (low/med): LOW Date Received: 09/02/99

% Solids: 91.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.2			P
7440-39-3	Barium	73.7			P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.03	U		P
7440-47-3	Chromium	9.3			P
7440-50-8	Copper	14.4			P
7439-92-1	Lead	4.2			P
7439-97-6	Mercury	0.02	U		CV
7440-02-0	Nickel	9.7			P
7782-49-2	Selenium	0.42	U		P
7440-22-4	Silver	0.08	U		P
7440-62-2	Vanadium	25.7			P
7440-66-6	Zinc	33.9			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Hexavalent Chromium
Method: SW846 7196
Matrix: SOLID

Sample Date : 09/01/99
Receipt Date : 09/02/99
Report Date : 10/01/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W9H9	22042-001	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.11	UG/G	U	0.11	1
B0W9H9	22042-001DUP	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.11	UG/G	U	0.11	1
B0W9H9	22042-001MS	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	110	%REC			1
NA	QCBLK207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.10	UG/G	U	0.10	1
NA	QCLCS207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	89	%REC			1

Data is incomplete without Case Narrative

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

Quanterra Environmental Services

CASE NARRATIVE
Revised 02/01/00

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

October 6, 1999

Attention: Joan Kessner

Project Number	:	550.267
SDG	:	**W02916**
Number of Samples	:	One (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	August 30, 1999

II. Introduction

On August 30, 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 8/30/99 at a temperature of 2 degrees C. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID:

St. Louis ID	BHI ID	SAF ID	Matrix	Date of Receipt
22015-001	B0W8B1	B99-078	SOIL	30-AUG-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 - 6010A
Mercury - 7471
Chromium Hex - 7196
Volatiles - 8260A (TCL + add ons)
Anions - 300.0 (Cl,Fl,NO2,NO3,OPO4,SO4)
Nitrate/Nitrite - 353.1
Sulfides - 9030
Ammonia - 350.1
Total Cyanide - 9010

FEB 2000
RECEIVED
Date
Log In

pH- 9045
Semi-Volatiles - 8270A (TCL)
TPH - Diesel Range WTPH-D
PCB - 8082

Deviation from Request: The BNA analysis was done following method 8270C. The Cyanide analysis was done using method 9012.

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.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Revised: The Volatile section of this narrative was revised on 10/21/99.

Revised: The SDG number was changed from W02870 to W02916 on 02/01/00.

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.

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Duplicate were analyzed with each preparation batch per the protocol for this analysis. A duplicate was analyzed as the matrix QC for the pH analysis.

Due to poor spike recoveries on the sulfide soil analysis of sample B0W8B1 (22015-001), the sample was reanalyzed using half the initial sample size. The reanalysis resulted in better MS recoveries and the second set of data was reported.

There are no comments or non-conformances associated with any of the other wet chemistry parameters.

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

Revised:

The add-on compounds for the Volatile analysis (1-Propanol and Ethanol) can not be seen on the GC/MS as a TIC due to the fact that the major ions for these compounds are below the scan range of the instrument.

There were no further comments or non-conformances associated with this analysis.

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

There were no comments or non-conformances associated with this analysis.

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

There were no comments or non-conformances associated with this analysis.

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

There were no comments or non-conformances associated with this analysis.

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:

Marti Ward

Marti Ward
St. Louis Project Manager

W02916 W02810

Quanterra August 31, 1999 03:10 pm
Account: 10722 Project: 550.267 Quanterra-Richland QAS No. 550.267 Rev. 0
Master Sample Login: 22015

Project Manager: S. Louvier

Reviewed by and Date: JSmith 8-31-99

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
22015-001	B0W8B1	Soil	27-AUG-99 07:48	30-AUG-99 11:30	29-SEP-99	AIRBORNE	3*	R9110-001

Comments
SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.

Data:

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	P	COLD	N/A	N/A	R4D	(459258:99)
1		BNA/8270C/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)
1		CL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		CN/9010/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459258:99)
1		FL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		NH3/350.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		NO2/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		NO3/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		NO3/353.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		OPHOS/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		PCB/8082/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)
1		PM/IT/Q4	S	COLD	22-SEP-99	23-FEB-00	R4D	(459258:99)
1		RAD/CSCREEN/Q4	S	COLD	22-SEP-99	26-FEB-00	R4D	(459258:99)
1		S/9030/Q4	S	COLD	22-SEP-99	03-SEP-99	R4D	(459258:99)
1		SO4/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		TPH/8015/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	22-SEP-99	28-AUG-99	R4D	(459256:99)
1		HG/7471/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459256:99)
1		ICAPT/6010A/Q4	S	COLD	22-SEP-99	23-FEB-00	R4D	(459256:99)
1		PH/9045/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459257:98)
1		VOA/8260/Q4	S	COLD	22-SEP-99	10-SEP-99	V12	(459255:99)

Sample No.	Client ID	C-Matrix	Date Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
22015-001DUP	B0W8B1	Soil	27-AUG-99 07:48	30-AUG-99 11:30	29-SEP-99	AIRBORNE	3*	R9110-001

SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	P	COLD	N/A	N/A	R4D	(459258:99)
1		CL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		CN/9010/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459258:99)
1		FL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		NH3/350.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		NO2/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		NO3/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		NO3/353.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1		OPHOS/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)
1		S/9030/Q4	S	COLD	22-SEP-99	03-SEP-99	R4D	(459258:99)
1		SO4/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	22-SEP-99	28-AUG-99	R4D	(459256:99)
1		PH/9045/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459257:98)

000005

3*=Sample has not been rad screened.

Quanterra August 31, 1999 03:10 pm
Account: 10722 Project: 550.267 Quanterra-Richland QAS No. 550.267 Rev. 0
Master Sample Login: 22015

Project Manager: S. Louvier

Reviewed by and Date: _____

Sample Header Template: _____

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category / (Container Numbers:% Filled)	Rad Sample No.
22015-001MS	B0W8B1	Soil	27-AUG-99 07:48	30-AUG-99 11:30	29-SEP-99	AIRBORNE	3*		R9110-001
SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.									
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	P	COLD	N/A	N/A	R4D	(459258:99)	
1		BNA/8270C/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1		CL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)	
1		CN/9010/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459258:99)	
1		FL/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)	
1		NH3/350.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)	
1		NO2/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)	
1		NO3/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)	
1		NO3/353.1/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)	
1		OPHOS/300.0/Q4	C	COLD	22-SEP-99	29-AUG-99	R4D	(459258:99)	
1		PCB/8082/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1		S/9030/Q4	S	COLD	22-SEP-99	03-SEP-99	R4D	(459258:99)	
1		SO4/300.0/Q4	C	COLD	22-SEP-99	24-SEP-99	R4D	(459258:99)	
1		TPH/8015/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	22-SEP-99	28-AUG-99	R4D	(459256:99)	
1		HG/7471/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459256:99)	
1		ICAPT/6010A/Q4	S	COLD	22-SEP-99	23-FEB-00	R4D	(459256:99)	
1		VOA/8260/Q4	S	COLD	22-SEP-99	10-SEP-99	V12	(459255:99)	
22015-001MSD	B0W8B1	Soil	27-AUG-99 07:48	30-AUG-99 11:30	29-SEP-99	AIRBORNE	3*		R9110-001
SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.									
1	AN - Amber Glass-500ml	BNA/8270C/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1		PCB/8082/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1		TPH/8015/Q4	S	COLD	22-SEP-99	10-SEP-99	R4D	(459259:98)	
1	AN - Amber Glass-60ML	HG/7471/Q4	S	COLD	22-SEP-99	24-SEP-99	R4D	(459256:99)	
1		ICAPT/6010A/Q4	S	COLD	22-SEP-99	23-FEB-00	R4D	(459256:99)	
1		VOA/8260/Q4	S	COLD	22-SEP-99	10-SEP-99	V12	(459255:99)	

Data:

3* Sample has not been rad screened.

Bechtel Hanford Inc. ~~W02870~~ W02916 — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST — B99-078-101 — Page 1 of 1

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 99-005	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: Quanterra Incorporated St Louis	Offsite Property No.: A99 0235		Bill of Lading/Air Bill No.: 4735 7852 8841
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	None	None	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL ✓	60mL ✓	60mL	60mL ✓	500mL ✓	500mL ✓	1000mL	✓ = all 100 % full		
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol) ✓	See item (1) in Special Instructions. ✓	Isotopic Uranium	pH (Soil) - 9045 ✓	See item (2) in Special Instructions. ✓	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 ✓	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B0W8B1	Soil	8-27-99	0748	X	X	~~X~~ BW 8-30-99	X	X	X	~~X~~ CTB 8-30-99		B0W5L8

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Roth	8/27/99 1300	Refer LB	8/27/99 1300
Relinquished By	Date/Time	Received By	Date/Time
BCF D	8-30-99 / 1130	C Jue	9/30/99 11:30
Relinquished By	Date/Time	Received By	Date/Time
C Jue	9/30/99 1400	FEDEX	9/30/99 1400
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	8-31-99 JRS		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. COLLECTOR NOT AVAILABLE TO SIGN COC.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.1; Total Cyanide - 9010

(3) Gamma Spectroscopy (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title	Date/Time: 8-31-99 0900
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Quanterra
Environmental Services

019582
WO2916
Login No.: 22015
~~WO2870~~ 92-8-00

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 8-31-99 Time: 900
Project No: 550.267
Initiated by: [illegible]
Shipper/No: Fed X 423579528841
RFA/COC Numbers: B99-078-101

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/not tamper evident type (circle all that apply).
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: temp. blank 2°
Temperature Variance Does Not Affect the Following Analyses: _____

Notes: _____

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: (or designate) [illegible] Date: 8-31-99
Project Management Review: Jennifer Smith Date: 8-31-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 6/29/99

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK206314-1	09/02/99	09/02/99	10	UG/KG	U	10	1
Bromomethane	74-83-9	QCBLK206314-1	09/02/99	09/02/99	10	UG/KG	U	10	1
Vinyl Chloride	75-01-4	QCBLK206314-1	09/02/99	09/02/99	10	UG/KG	U	10	1
Chloroethane	75-00-3	QCBLK206314-1	09/02/99	09/02/99	10	UG/KG	U	10	1
Methylene Chloride	75-09-2	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Acetone	67-64-1	QCBLK206314-1	09/02/99	09/02/99	2	UG/KG	J	21	1
Carbon Disulfide	75-15-0	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,2-Dichloroethene (total)	540-59-0	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Chloroform	67-66-3	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,2-Dichloroethane	107-06-2	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
2-Butanone (MEK)	78-93-3	QCBLK206314-1	09/02/99	09/02/99	21	UG/KG	U	21	1
1,1,1-Trichloroethane	71-55-6	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Bromodichloromethane	75-27-4	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Trichloroethene	79-01-6	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Dibromochloromethane	124-48-1	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Benzene	71-43-2	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Bromoform	75-25-2	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
4-Methyl-2-Pentanone (MIBK)	108-10-1	QCBLK206314-1	09/02/99	09/02/99	21	UG/KG	U	21	1
2-Hexanone	591-78-6	QCBLK206314-1	09/02/99	09/02/99	21	UG/KG	U	21	1
Tetrachloroethene	127-18-4	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Toluene	108-88-3	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Chlorobenzene	108-90-7	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
EthylBenzene	100-41-4	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Styrene	100-42-5	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Xylene (total)	1330-20-7	QCBLK206314-1	09/02/99	09/02/99	5	UG/KG	U	5	1
Bromofluorobenzene	460-00-4	QCBLK206314-1	09/02/99	09/02/99	96	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206314-1	09/02/99	09/02/99	122	%REC			1
Toluene-d8	2037-26-5	QCBLK206314-1	09/02/99	09/02/99	113	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK206314-1	09/02/99	09/02/99	112	%REC			1
Trichloroethene	79-01-6	QCBLK206314-1	09/02/99	09/02/99	99	%REC			1
Benzene	71-43-2	QCBLK206314-1	09/02/99	09/02/99	108	%REC			1
Toluene	108-88-3	QCBLK206314-1	09/02/99	09/02/99	101	%REC			1
Chlorobenzene	108-90-7	QCBLK206314-1	09/02/99	09/02/99	106	%REC			1
Bromofluorobenzene	460-00-4	QCBLK206314-1	09/02/99	09/02/99	97	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206314-1	09/02/99	09/02/99	128	%REC			1
Toluene-d8	2037-26-5	QCBLK206314-1	09/02/99	09/02/99	107	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK206314-1	09/02/99	09/02/99	111	%REC			1
Trichloroethene	79-01-6	QCBLK206314-1	09/02/99	09/02/99	97	%REC			1
Benzene	71-43-2	QCBLK206314-1	09/02/99	09/02/99	106	%REC			1
Toluene	108-88-3	QCBLK206314-1	09/02/99	09/02/99	109	%REC			1
Chlorobenzene	108-90-7	QCBLK206314-1	09/02/99	09/02/99	106	%REC			1
Bromofluorobenzene	460-00-4	QCBLK206314-1	09/02/99	09/02/99	98	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206314-1	09/02/99	09/02/99	126	%REC			1
Toluene-d8	2037-26-5	QCBLK206314-1	09/02/99	09/02/99	112	%REC			1

Data is incomplete without Case Narrative

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02870~~ W02916 2-8-02

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ESMP9195

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 Date Analyzed: 09/02/99

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(mL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	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	2	J
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	21	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	Chlorodibromomethane	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	21	U
591-78-6	2-Hexanone	21	U
127-18-4	Tetrachloroethene	5	U
108-88-3	Toluene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA MO Contract: 550.267

~~Lab Code: ITMO~~ ~~Case No.:~~ ~~SAS No.:~~ ~~SDG No.: W02970~~ W02916 2-8-00

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ESMP9195

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 Date Analyzed: 09/02/99

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(mL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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28.				
29.				
30.				

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Chlorophenol	95-57-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
1,3-Dichlorobenzene	541-73-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
1,4-Dichlorobenzene	106-46-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
1,2-Dichlorobenzene	95-50-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Methylphenol	95-48-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,2'-oxybis (1-Chloropropane)	108-60-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Methylphenol	106-44-5	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Hexachloroethane	67-72-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Nitrobenzene	98-95-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Isophorone	78-59-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Nitrophenol	88-75-5	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,4-Dimethylphenol	105-67-9	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,4-Dichlorophenol	120-83-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Naphthalene	91-20-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Chloroaniline	106-47-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Hexachlorobutadiene	87-68-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Methylnaphthalene	91-57-6	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Hexachlorocyclopentadiene	77-47-4	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
2,4,6-Trichlorophenol	88-06-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,4,5-Trichlorophenol	95-95-4	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Chloronaphthalene	91-58-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Nitroaniline	88-74-4	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
Acenaphthylene	208-96-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,6-Dinitrotoluene	606-20-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
3-Nitroaniline	99-09-2	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
Acenaphthene	83-32-9	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2,4-Dinitrophenol	51-28-5	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
Dibenzofuran	132-64-9	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Nitrophenol	100-02-7	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
2,4-Dinitrotoluene	121-14-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Fluorene	86-73-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
DimethylPhthalate	131-11-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Diethylphthalate	84-66-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Nitroaniline	100-01-6	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
n-Nitrosodiphenylamine	86-30-6	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Hexachlorobenzene	118-74-1	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Pentachlorophenol	87-86-5	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
Phenanthrene	85-01-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Anthracene	120-12-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Di-N-Butylphthalate	84-74-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Fluoranthene	206-44-0	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Pyrene	129-00-0	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
ButylBenzylPhthalate	85-68-7	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Benzo(a)Anthracene	56-55-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK206204-1	09/02/99	09/03/99	1700	UG/KG	U	1700	1
Chrysene	218-01-9	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK206204-1	09/02/99	09/03/99	82	UG/KG	BJ	350	1
di-N-OctylPhthalate	117-84-0	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Benzo(b)Fluoranthene	205-99-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Benzo(k)Fluoranthene	207-08-9	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Benzo(a)Pyrene	50-32-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Carbazole	86-74-8	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK206204-1	09/02/99	09/03/99	350	UG/KG	U	350	1
2-Fluorophenol	367-12-4	QCBLK206204-1	09/02/99	09/03/99	68	%REC			1
Phenol-d5	4165-62-2	QCBLK206204-1	09/02/99	09/03/99	73	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK206204-1	09/02/99	09/03/99	69	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK206204-1	09/02/99	09/03/99	67	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK206204-1	09/02/99	09/03/99	74	%REC			1
Terphenyl-d14	1718-51-0	QCBLK206204-1	09/02/99	09/03/99	70	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK206204-1	09/02/99	09/03/99	63	%REC			1
2-Chlorophenol	95-57-8	QCBLK206204-1	09/02/99	09/03/99	67	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK206204-1	09/02/99	09/03/99	63	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK206204-1	09/02/99	09/03/99	66	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK206204-1	09/02/99	09/03/99	71	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK206204-1	09/02/99	09/03/99	76	%REC			1
Acenaphthene	83-32-9	QCBLK206204-1	09/02/99	09/03/99	68	%REC			1
4-Nitrophenol	100-02-7	QCBLK206204-1	09/02/99	09/03/99	73	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK206204-1	09/02/99	09/03/99	83	%REC			1
Pentachlorophenol	87-86-5	QCBLK206204-1	09/02/99	09/03/99	66	%REC			1
Pyrene	129-00-0	QCBLK206204-1	09/02/99	09/03/99	76	%REC			1
2-Fluorophenol	367-12-4	QCBLK206204-1	09/02/99	09/03/99	69	%REC			1
Phenol-d5	4165-62-2	QCBLK206204-1	09/02/99	09/03/99	73	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK206204-1	09/02/99	09/03/99	69	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK206204-1	09/02/99	09/03/99	64	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK206204-1	09/02/99	09/03/99	71	%REC			1
Terphenyl-d14	1718-51-0	QCBLK206204-1	09/02/99	09/03/99	74	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK206204-1	09/02/99	09/03/99	60	%REC			1
2-Chlorophenol	95-57-8	QCBLK206204-1	09/02/99	09/03/99	62	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK206204-1	09/02/99	09/03/99	63	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK206204-1	09/02/99	09/03/99	63	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK206204-1	09/02/99	09/03/99	67	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK206204-1	09/02/99	09/03/99	71	%REC			1
Acenaphthene	83-32-9	QCBLK206204-1	09/02/99	09/03/99	70	%REC			1
4-Nitrophenol	100-02-7	QCBLK206204-1	09/02/99	09/03/99	76	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK206204-1	09/02/99	09/03/99	78	%REC			1
Pentachlorophenol	87-86-5	QCBLK206204-1	09/02/99	09/03/99	78	%REC			1
Pyrene	129-00-0	QCBLK206204-1	09/02/99	09/03/99	66	%REC			1
2-Fluorophenol	367-12-4	QCBLK206204-1	09/02/99	09/03/99	66	%REC			1
Phenol-d5	4165-62-2	QCBLK206204-1	09/02/99	09/03/99	70	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK206204-1	09/02/99	09/03/99	69	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK206204-1	09/02/99	09/03/99	65	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK206204-1	09/02/99	09/03/99	70	%REC			1
Terphenyl-d14	1718-51-0	QCBLK206204-1	09/02/99	09/03/99	64	%REC			1

Data is incomplete without Case Narrative

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA Contract: 550.267

~~Lab Code: ITSL Case No.: SAS No.: SDG No.: W02870~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: KSMP2597

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 dec._____ Date Extracted: 09/02/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/03/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	350	U
111-44-4	Bis(2-chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2-oxybis(1-Chloropropane)	350	U
621-64-7	N-Nitrosodinpropylamine	350	U
106-44-5	4-Methylphenol	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	Bis(2-chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	350	U
91-58-7	2-Chloronaphthalene	350	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA Contract: 550.267

~~Lab Code: ITSL Case No.: SAS No.: SDG No.: W02870~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: KSMP2597

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 dec._____ Date Extracted: 09/02/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/03/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
88-74-4	2-Nitroaniline	1700	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
100-02-7	4-Nitrophenol	1700	U
121-14-2	2,4-Dinitrotoluene	350	U
86-73-7	Fluorene	350	U
131-11-3	Dimethylphthalate	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
56-55-3	Benzo(a)Anthracene	350	U
91-94-1	3,3'-Dichlorobenzidine	1700	U

(1) - Cannot be separated from Diphenylamine

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA Contract: 550.267

~~Lab Code: ITSL Case No.: SAS No.: SDG No.: W028702~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: KSMP2597

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 dec._____ Date Extracted: 09/02/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/03/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
218-01-9	Chrysene	350	U
117-81-7	bis(2-ethylhexyl)Phthalate	82	JB
117-84-0	Di-n-octylphthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
86-74-8	Carbazole	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITSL Case No.: SAS No.: SDG No.: ~~W028700~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: KSMP2597

Level: (low/med) LOW Date Received: 08/30/99

% Moisture: not dec. 5 dec._____ Date Extracted: 09/02/99

Final Volume: 1000 Date Analyzed: 09/03/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I SV-TIC 1/87 Rev.

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1221	11104-28-2	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1232	11141-16-5	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1242	53469-21-9	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1248	12672-29-6	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1254	11097-69-1	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
Aroclor-1260	11096-82-5	QCBLK206205-1	09/02/99	09/03/99	35	UG/KG	U	35	1
TCMX	877-09-8	QCBLK206205-1	09/02/99	09/03/99	113	%REC			1
DCB	2051-24-3	QCBLK206205-1	09/02/99	09/03/99	118	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206205-1	09/02/99	09/03/99	101	%REC			1
Aroclor-1260	11096-82-5	QCBLK206205-1	09/02/99	09/03/99	112	%REC			1
TCMX	877-09-8	QCBLK206205-1	09/02/99	09/03/99	115	%REC			1
DCB	2051-24-3	QCBLK206205-1	09/02/99	09/03/99	118	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206205-1	09/02/99	09/03/99	105	%REC			1
Aroclor-1260	11096-82-5	QCBLK206205-1	09/02/99	09/03/99	109	%REC			1
TCMX	877-09-8	QCBLK206205-1	09/02/99	09/03/99	115	%REC			1
DCB	2051-24-3	QCBLK206205-1	09/02/99	09/03/99	118	%REC			1

Data is incomplete without Case Narrative

FORM 1 Quanterra-Richland SAMPLE NO.

PCB ORGANICS ANALYSIS DATA SHEET

B0W8B1

Lab Name: QUANTERRA, ST. LOUIS MO Contract: 550.267

Lab Code: Case No.: SAS No.: SDG No.: ~~W02870~~ W02916 9/8.00

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DB__703

% Moisture: 5 decanted: (Y/N) N Date Received: 08/30/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 09/02/99

Concentrated Extract Volume: 10 (mL) Date Analyzed: 09/03/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	35	U
1114-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U
37324-23-5	Aroclor-1262	35	U
11100-14-4	Aroclor-1268	35	U

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	26	MG/KG	U	26	1
Waste Oil	TPH/OILH	QCBLK206095-1	08/31/99	09/04/99	36	MG/KG		26	1
Miscellaneous Oil	MO-002	QCBLK206095-1	08/31/99	09/04/99	26	MG/KG	U	26	1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	78	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	92	%REC			1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	88	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	76	%REC			1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	86	%REC			1

Data is incomplete without Case Narrative

FORM 1 Quanterra-Richland SAMPLE NO.

TPH ORGANICS ANALYSIS DATA SHEET

B0W8B1

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02870~~ W02916 2/8/00

Matrix: (soil/water) SOIL Lab Sample ID: 22015-001TPH

Sample wt/vol: 20.2 (g/mL) G Lab File ID: FA__792

% Moisture: 5 decanted: (Y/N) N Date Received: 08/30/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:08/31/99

Concentrated Extract Volume: 5(ml) Date Analyzed: 09/04/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Diesel	26	U
	----------Waste Oil	36	
	----------Miscellaneous	26	U

FORM I TPH

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.017	MG/KG	U	0.035	1
B0W8B1	22015-001MS	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	114	%REC			1
B0W8B1	22015-001MSD	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	117	%REC			1
NA	QCLCS206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	109	%REC			1
NA	QCBLK206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.017	MG/KG	U	0.033	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	1.9	MG/KG		1.1	1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	84.5	MG/KG		21.0	1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	0.32	MG/KG	B	0.53	1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	0.03	MG/KG	U	0.53	1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	6.2	MG/KG		1.1	1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	12.7	MG/KG		2.6	1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	3.8	MG/KG		0.32	1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	7.2	MG/KG		4.2	1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	0.41	MG/KG	U	0.53	1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	0.07	MG/KG	U	1.1	1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	36.9	MG/KG		5.3	1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	36.7	MG/KG		2.1	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	96	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	102	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	79	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	96	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	102	%REC			1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	95	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	87	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	88	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	113	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	99	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	101	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	79	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	95	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	101	%REC			1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	90	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	86	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	88	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1

Data is incomplete without Case Narrative

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.267___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: ~~W02870~~ W02916 _____

7-8-00

SOW No.: SW846

EPA Sample No.	Lab Sample ID
B0W8B1	22015-001
B0W8B1SD	22015-001SD
B0W8B1S	22015-001S

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:

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: _____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0W8B1

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: W02870 W02910

Matrix (soil/water): SOIL Lab Sample ID: 22015-001

Level (low/med): LOW Date Received: 08/30/99

% Solids: 95.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.9			P
7440-39-3	Barium	84.5			P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	0.03	U		P
7440-47-3	Chromium	6.2			P
7440-50-8	Copper	12.7			P
7439-92-1	Lead	3.8			P
7439-97-6	Mercury	0.02	U		CV
7440-02-0	Nickel	7.2			P
7782-49-2	Selenium	0.41	U		P
7440-22-4	Silver	0.07	U		P
7440-62-2	Vanadium	36.9			P
7440-66-6	Zinc	36.7			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: AMMONIA
Method: EPA 350.1
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	0.52	MG/KG	U	0.52	1
B0W8B1	22015-001DUP	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	0.53	MG/KG	U	0.53	1
B0W8B1	22015-001MS	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	83	%REC			1
NA	QCBLK207144-1	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	0.50	MG/KG	U	0.50	1
NA	QCLCS207144-1	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	96	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: CYANIDE
Method: EPA 9010
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Cyanide	57-12-5	QCBLK206677-1	09/08/99	09/09/99	0.25	MG/KG	U	0.25	1
B0W8B1	22015-001DUP	Cyanide	57-12-5	QCBLK206677-1	09/08/99	09/09/99	0.25	MG/KG	U	0.25	1
B0W8B1	22015-001MS	Cyanide	57-12-5	QCBLK206677-1	09/08/99	09/09/99	94	%REC			1
NA	QCBLK206677-1	Cyanide	57-12-5	QCBLK206677-1	09/08/99	09/09/99	0.25	MG/KG	U	0.25	1
NA	QCLCS206677-1	Cyanide	57-12-5	QCBLK206677-1	09/08/99	09/09/99	92	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 10/04/99

Quanterra ID : 22015-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	0.98	MG/KG	B	0.10	1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	1.94	MG/KG	B	0.21	1
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	0.020	MG/KG	U	0.02	1
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	8.64	MG/KG		0.02	1
O-phosphate-P	14265-44-2	QCBLK207492-1	09/15/99	09/15/99	4.26	MG/KG	B	0.52	1
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	10.6	MG/KG		1.13	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Client ID: B0W8B1

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 10/04/99

Quanterra ID : 22015-001DUP

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	1.09	MG/KG		0.10	1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	2.11	MG/KG		0.21	1
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	0.020	MG/KG	U	0.02	1
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	8.27	MG/KG		0.02	1
O-phosphate-P	14265-44-2	QCBLK207492-1	09/15/99	09/15/99	4.11	MG/KG	B	0.52	1
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	10.9	MG/KG		1.13	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID: B0W8B1

Quanterra ID : 22015-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	102	%REC			1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	114	%REC			10
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	132	%REC			10
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	115	%REC			10
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	115	%REC			10

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001MS	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	103	%REC			1
NA	QCBLK207854-1	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	0.50	MG/KG	U	0.50	1
NA	QCLCS207854-1	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	98	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Hexavalent Chromium
Method: SW846 7196
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.10	UG/G	U	0.10	1
B0W8B1	22015-001DUP	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.10	UG/G	U	0.10	1
B0W8B1	22015-001MS	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	80	%REC			2
NA	QCBLK207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.10	UG/G	U	0.10	1
NA	QCLCS207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	89	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: NO3-NO2
Method: EPA 353.1
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	6.76	MG/KG		0.50	1
B0W8B1	22015-001DUP	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	6.43	MG/KG		0.50	1
B0W8B1	22015-001MS	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	69	%REC	*		1
NA	QCBLK207145-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	0.50	MG/KG	U	0.50	1
NA	QCLCS207145-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	104	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: pH
Method: EPA 9045
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	pH	PH	QCBLK206492-1	09/07/99	09/07/99	8.45	PH			1
B0W8B1	22015-001DUP	pH	PH	QCBLK206492-1	09/07/99	09/07/99	8.41	PH			1
NA	QCBLK206492-1	pH	PH	QCBLK206492-1	09/07/99	09/07/99	5.74	PH			1

Analysis time for sample 22015-001 is 18:05.
Analysis time for sample 22015-001DUP is 18:06.
Analysis time for sample QCBLK206492-1 is 18:02.

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

~~Project: Bechtel Hanford Inc.~~

Category: SULFIDE
Method: EPA 9030
Matrix: SOLID

Sample Date : 08/27/99
Receipt Date : 08/30/99
Report Date : 09/30/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W8B1	22015-001	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	21.0	UG/G	U	21.0	1
B0W8B1	22015-001DUP	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	19.3	UG/G		20.8	1
B0W8B1	22015-001MS	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	109	%REC			1
NA	QCBLK206855-1	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	20.0	UG/G	U	20.0	1
NA	QCLCS206855-1	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	112	%REC			1

Data is incomplete without Case Narrative

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE
Revised 10/21/99

OCT. 1999
RECEIVED
Data
Log In

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

October 5, 1999

Attention: Joan Kessner

Project Number	:	550.267
SDG	:	~~W02879~~ W02916 from 2-11-2000
Number of Samples	:	One (1)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	August 23, 1999

II. Introduction

On August 23, 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 8/25/99 at a temperature of 18 degrees C. The "blue ice" used for shipping was melted. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID:

St. Louis ID	BHI ID	SAF ID	Matrix	Date of Receipt
21999-001	B0W5P8	B99-078	SOIL	23-AUG-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 - 6010A
Mercury - 7471
Chromium Hex - 7196
Volatiles - 8260A (TCL + add ons)
Anions - 300.0 (Cl,Fl,NO2,NO3,OPO4,SO4)
Nitrate/Nitrite - 353.1
Sulfides - 9030
Ammonia - 350.1

RESUBMITTED DATA

Total Cyanide - 9012
pH- 9045
Semi-Volatiles - 8270A (TCL)
TPH - Diesel Range WTPH-D
PCB - 8082

Deviation from Request: The BNA analysis was done following method 8270C.

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.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Revised: The Volatile section of this narrative was revised on 10/21/99.

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.

RESUBMITTED DATA

The recoveries of the matrix spike and/or the matrix spike duplicate for the following list of elements was not within the 75%-125% range. All associated data was flagged with a "N".

	% REC MS	% REC MSD
Copper	105.9*	126.9
Zinc	170.4	199.2

*Data met criteria – listed for reference only

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Duplicate were analyzed with each preparation batch per the protocol for this analysis. A duplicate was analyzed as the matrix QC for the pH analysis.

Due to poor spike recoveries for the sulfide in soil analysis of sample B0W5P8 (21999-001), the sample was re-analyzed using half the initial sample size. The re-analysis also resulted in poor MS recoveries. The second set of data was reported.

The MS recovery in sample B0W5P8 (21999-001) for chloride (128%), nitrite (145%), nitrate (162%) and sulfate (266%) were outside the 75-125% criteria.

There are no comments or non-conformances associated with any of the other wet chemistry parameters.

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

Revised:

The add-on compounds for the Volatile analysis (1-Propanol and Ethanol) can not be seen on the GC/MS as a TIC due to the fact that the major ions for these compounds are below the scan range of the instrument.

There were no further comments or non-conformances associated with this analysis.

RESUBMITTED DATA

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

There were no comments or non-conformances associated with this analysis.

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

There were no comments or non-conformances associated with this analysis.

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

There were no comments or non-conformances associated with this analysis.

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:

Marti Ward

Marti Ward
St. Louis Project Manager

RESUBMITTED DATA

Quanterra St. Louis

Sample Preparation Methods

"Quanterra Standard" Preparation Method Used Unless Otherwise Noted

Organic Preparation Methods	**Matrix**	**Analysis**	**SW846 Reference**
Separatory Funnel Liquid-Liquid ***(Quanterra Standard)***	Liquid	Pesticides, PCBs, Semivolatiles, TPH (Diesel Range Organics), Herbicides, TCLP (Semivolatiles, Pesticides, Herbicides), Phenols, PAHs,	3510C
Continuous Liquid-Liquid	Liquid	Pesticides, Semivolatiles	3520C
Ultrasonic ***(Quanterra Standard)***	Solid	Pesticides, PCBs, Semivolatiles, Herbicides, PAHs	3550B
Pressurized Fluid Extraction	Solid	Pesticides, PCBs, Semivolatiles, PAHs	3545
Waste Dilution ***(Quanterra Standard)***	Solvent/Oil	Pesticides, PCBs, Semivolatiles, TPH, Herbicides, TCLP (Semivolatiles, Pesticides, Herbicides)	3580A
Purge and Trap ***(Quanterra Standard)***	All	Volatiles, Gasoline Range Organics	5030B
Toxicity Characteristic Leaching Procedure ***(Quanterra Standard)***	All	Pesticides, Semivolatiles, Herbicides, Volatiles, Metals	1311
Inorganic Preparation Methods	**Matrix**	**Analysis**	**SW846 Reference**
Acid Digestion ***(Quanterra Standard)***	Liquid	ICP or FLAA Metals	3010A
Acid Digestion – Total Recoverable	Liquid	ICP or FLAA Metals	3005A
Acid Digestion ***(Quanterra Standard)***	Liquid	GFAA Metals	3020A
Acid Digestion ***(Quanterra Standard)***	Solid	ICP, FLAA, or GFAA Metals	3050B

W028:79

Quanterra August 27, 1999 05:03 pm
Account: 10722 Project: 550.267 Quanterra-Richland QAS No. 550.267 Rev. 0
Master Sample Login: 21999

Project Manager: S. Louvier

Reviewed by and Date: Smith 8-27-99

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
21999-001	B0W5P8	Soil	19-AUG-99 09:00	23-AUG-99 14:30	22-SEP-99	AIRBORNE	3*	R9100-001

Comments
SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	P	COLD	N/A	N/A	R2F	(458999:99)
1		BNA/8270C/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)
1		CL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		CN/9010/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(458999:99)
1		FL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		NH3/350.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		NO2/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		NO3/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		NO3/353.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		OPHOS/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		PCB/8082/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)
1		PM/IT/Q4	S	COLD	15-SEP-99	15-FEB-00	R2F	(458999:99)
1		RAD/CSCREEN/Q4	S	COLD	15-SEP-99	19-FEB-00	R2F	(458999:99)
1		S/9030/Q4	S	COLD	15-SEP-99	26-AUG-99	R2F	(458999:99)
1		SO4/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		TPH/8015/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	15-SEP-99	20-AUG-99	R2F	(458997:99)
1		HG/7471/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458997:99)
1		ICAPT/6010A/Q4	S	COLD	15-SEP-99	15-FEB-00	R2F	(458997:99)
1		PH/9045/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(458998:98)
1		VOA/8260/Q4	S	COLD	15-SEP-99	02-SEP-99	V12	(458996:99)

Sample No.	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
21999-001DUP	B0W5P8	Soil	19-AUG-99 09:00	23-AUG-99 14:30	22-SEP-99	AIRBORNE	3*	R9100-001

SAF B99-078//Report 1-propanol and ethanol as part of the 8260 list.//See QAS for ICAP list.

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	P	COLD	N/A	N/A	R2F	(458999:99)
1		CL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		CN/9010/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(458999:99)
1		FL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		NH3/350.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		NO2/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		NO3/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		NO3/353.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1		OPHOS/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)
1		S/9030/Q4	S	COLD	15-SEP-99	26-AUG-99	R2F	(458999:99)
1		SO4/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	15-SEP-99	20-AUG-99	R2F	(458997:99)
1		PH/9045/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(458998:98)

3*-Sample has not been rad screened.

000015

Quanterra August 27, 1999 05:03 pm
Account: 10722 Project: 550.267 Quanterra-Richland QAS No. 550.267 Rev. 0
Master Sample Login: 21999

Project Manager: S. Louvier

Reviewed by and Date: _____

Sample Header Template: _____

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category / (Container Numbers:% Filled)	Rad Sample No.
21999-001MS	B0W5P8	Soil	19-AUG-99 09:00	23-AUG-99 14:30	22-SEP-99	AIRBORNE		3*	R9100-001
SAF B99-078//Report 1-propanol and ethanol as part of 8260 list.//See QAS for ICAP list.									
1	AN - Amber Glass-500ml	ANIONS/300.0/Q4	F	COLD	N/A	N/A	R2F	(458999:99)	
1		BNA/8270C/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1		CL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)	
1		CN/9010/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(458999:99)	
1		FL/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)	
1		NH3/350.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)	
1		NO2/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)	
1		NO3/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)	
1		OPHOS/300.0/Q4	C	COLD	15-SEP-99	21-AUG-99	R2F	(458999:99)	
1		PCB/8082/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1		SO4/300.0/Q4	C	COLD	15-SEP-99	16-SEP-99	R2F	(458999:99)	
1		TPH/8015/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1	AN - Amber Glass-60ML	CR6/7196/Q4	S	COLD	15-SEP-99	20-AUG-99	R2F	(458997:99)	
1		HG/7471/Q4	S	COLD	20-SEP-99	16-SEP-99	R2F	(458997:99)	
1		ICAPT/6010A/Q4	S	COLD	20-SEP-99	15-FEB-00	R2F	(458997:99)	
1		NO3/353.1/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458997:99)	
1		S/9030/Q4	S	COLD	15-SEP-99	26-AUG-99	R2F	(458997:99)	
1		VOA/8260/Q4	S	COLD	15-SEP-99	02-SEP-99	V12	(458996:99)	
21999-001MSD	B0W5P8	Soil	19-AUG-99 09:00	23-AUG-99 14:30	22-SEP-99	AIRBORNE		3*	R9100-001
SAF B99-078//Report 1-propanol and ethanol as part of 8260 list.//See QAS for ICAP list.									
1	AN - Amber Glass-500ml	BNA/8270C/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1		PCB/8082/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1		TPH/8015/Q4	S	COLD	15-SEP-99	02-SEP-99	R2F	(459000:98)	
1	AN - Amber Glass-60ML	HG/7471/Q4	S	COLD	15-SEP-99	16-SEP-99	R2F	(458997:99)	
1		ICAPT/6010A/Q4	S	COLD	15-SEP-99	15-FEB-00	R2F	(458997:99)	
1		VOA/8260/Q4	S	COLD	15-SEP-99	02-SEP-99	V12	(458996:99)	

000006

3*-Sample has not been rad screened.

W02879 CWU/GDT REV 14.18

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-43

Collector Brent Porter	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** GP-3 <15' bgs 9.5 ~ 10.5		**SAF No.** B99-078
Ice Chest No. 2071	**Field Logbook No.** EL 1511		**Method of Shipment** Hand Deliver- Govt vehicle
Shipped To Quanterra Incorporated	**Offsite Property No.** N/A		**Bill of Lading/Air Bill No.** N/A
Q-27038			**COA** B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W02879

SAMPLE ANALYSIS J9H230143

			Preservation	None	Cool 4C	None	None	None	None	Cool 4C	Cool 4C	None	
			Type of Container	P	aG	aG	aG	aG	aG	aG	aG	aG	
			No. of Container(s)	1	1	1	1	1	1	1	1	1	
			Volume	1L	60mL	60mL	60mL	60mL	60mL	500mL	500mL	1000mL	
				Activity Scan	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (1) in Special Instructions.	Isotopic Uranium	Neptunium-237	pH (Soil) - 9045	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (3) in Special Instructions.	
					100%	100% *	*		100%	100%	100% *		
Sample No.	Matrix *	Sample Date	Sample Time										
B0W5P8	Soil	8-19-99	0900	X	X	X	X	X	X	X	X	X	DOW5L6

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/19/99 15:00	Received By: B Reifer IB	Date/Time: 8/19/99 15:00
Relinquished By: REF IB	Date/Time: 82399 1000	Received By: SOGALE	Date/Time: 82399 1000
Relinquished By: For SG Gall / N.L. Bowden	Date/Time: 8/23/99 1430	Received By: Gledelberg	Date/Time: 8-23-99
Relinquished By: Gledelberg	Date/Time: 8/24/99	Received By:	Date/Time: 8/25/99 1020
LABORATORY SECTION	Received By		Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.1; Total Cyanide - 9010

(3) Gamma Spectroscopy {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

000001

RADIOACTIVE SHIPMENT RECORD

106608 3.

Page 1 of 2

1. SHIP FROM U.S. DEPT. OF ENERGY C/O

Company: Bechtel Hanford Inc

Address: 3728 Building, 300-Area

City, State, Zip: Richland, WA 99352

Contact: David St. John

Phone: 1-509-372-9588

Ship: [X] Prepaid [ ] Collect 4.

Via: [X] Motor [X] ~~Air Psgr~~ [ ] UPS [ ] Rail [ ] Air Cargo [ ] Site Carrier

SHIPMENT AUTHORIZATION NUMBER

2. SHIP TO

Company: Quanterra

Address: 2800 George Washington Wy.

City, State, Zip: Richland, WA 99352

Attention: Karen Actenberg

Phone: 1-509-375-3131

Markings Applied 6.

- [ ] Radioactive - LSA
- [ ] Radioactive - SCO
- [ ] Type A
- [ ] Type B with trefoil

LSA Description 8.

- [ ] LSA-I
- [ ] LSA-II
- [ ] LSA-III
- [ ] SCO-I
- [ ] SCO-II

Labels Applied 10.

- [ ] Empty
- [ ] Radioactive White - I
- [ ] Radioactive Yellow - II
- [ ] Radioactive Yellow - III
- [ ] Subsidiary Hazard

For Normal Form only 7.

Identify

Physical Form: [ ] Liquid [ ] Gas [X] Solid soil

Chemical Form: [X] Elemental [ ] Metal [ ] Nitrate [ ] Oxide [ ] Mixture [ ] Other

EMERGENCY RESPONSE 9.

Telephone: 1-888-766-0771

Emergency Response Guide(s): 161

Highway Route Controlled Quantity [ ]

Exclusive Use Shipment with instructions [ ]

Placards Applied [ ]

If Rail Specify:

Fissile Excepted, Grams [ ]

Excepted Package Statement [X]

5. HM Proper Shipping Name: Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
X	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	Surface Contaminated Object	7	UN2913

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than N/A Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11.

No. Pkg.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	~~Bq~~ TBq/Package	Gr. Wt. Kg.
1	poly cooler	Strongtight	2071	Tape	Cs-137	N/A	8.2×10^{-7}	14 kg
	glass sample containers wrapped in bubble wrap and in double poly bags packed in wet ice 4000 gms total							
(Shipper may describe package in detail on one of the unused lines above)					TOTALS	N/A	8.2×10^{-7}	14 kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Certifier's Signature: David St. John — On behalf of DOE-RL — Date: 8/23/99 — Organization: ERC-AFS — Complete Cost Code (Inc. End Function): R20CW1 671C

13. Surface Dose Rate of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Dose Rate @ 1 Meter from Surface of Package: [X] <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Smears of Outer Container: [X] <0.41 Bq (22 dpm) ß γ /cm² [X] <0.04 Bq (2.2 dpm) α /cm² [ ] <Tbl. 2-2 HSRCM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE: Surface [X] <2 mSv/hr (200 mrem/hr); @ 2 meters [X] <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper [X] <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: B Mercer — Bldg. 3728 — Survey No. FF½.99.1273 — Date 8.23.99

14. TRANSPORTER: Vehicle Number GL3-30345 — DRIVER SIGNATURE: M.G. Bachler

RECEIVER: RECEIVER SIGNATURE: [signature] — Date 8-23-99

15. OFFSITE AUTHORIZATION

Shipment has been inspected and verified to be in compliance with DOT regulations

Authorized Signature: [signature] — Printed Name: Keith R. Smith — Date 8-23-99

16. AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION: [X] N/A

CARGO AIRCRAFT: [ ] Cargo Aircraft Only Labels Applied

PASSENGER AIRCRAFT: [X] Ltd Qty NA [X] ~~Research/Medical Diagnosis~~ NA [ ] <3 T.I. [ ] Human Medical Research

Pkg. Dimensions (cm)

17. OFFSITE AUTHORIZATION

Tracking No.	Date Shipped	Routing	ETA
RMBH 3651	8-23-99	BHI Vehicle	8-23-99
Surveyed By	Date	Approved for Shipment Offsite	Date
		[signature]	8-23-99

000608

54-8000-088 (06/97)

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 8/23 1430 SG#: W02879

Work Order Number: J9H230143 SAF #: B99-078

Shipping Container ID: 2071 Chain of Custody # B99-078-43

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 5°
5. Vermiculite/packing materials is Wet [ ] Dry [ ]
6. Number of samples in shipping container: 9
7. Sample holding times exceeded? Yes [ ] No [ ]

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

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

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

Sample Custodian/Laboratory: [signature] Date: 8-23-99

Telephoned To: _____ On _____ By _____

Quanterra
Environmental Services

019559

Login No.: 21999
W028879

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Richland / BHI
Date: ~~AIRBORNE~~ 8/25/99 Time: 1020
Project No: 550.267
Initiated by: [illegible]
Shipper/No: AIRBORNE
RFA/COC Numbers: B99-078-43

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/not tamper evident type (circle all that apply).
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: 18°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Blue ice was melted completely upon receipt

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: (or designate) [illegible] Date: 8/25/99

Project Management Review: Jennifer Smith Date: 8-27-99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 6/29/99

000010

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK206144-1	08/31/99	08/31/99	14	UG/KG	U	14	1
Bromomethane	74-83-9	QCBLK206144-1	08/31/99	08/31/99	14	UG/KG	U	14	1
Vinyl Chloride	75-01-4	QCBLK206144-1	08/31/99	08/31/99	14	UG/KG	U	14	1
Chloroethane	75-00-3	QCBLK206144-1	08/31/99	08/31/99	14	UG/KG	U	14	1
Methylene Chloride	75-09-2	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Acetone	67-64-1	QCBLK206144-1	08/31/99	08/31/99	8	UG/KG	J	27	1
Carbon Disulfide	75-15-0	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,1-Dichloroethene	75-35-4	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,1-Dichloroethane	75-34-3	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,2-Dichloroethene (total)	540-59-0	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Chloroform	67-66-3	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,2-Dichloroethane	107-06-2	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
2-Butanone (MEK)	78-93-3	QCBLK206144-1	08/31/99	08/31/99	27	UG/KG	U	27	1
1,1,1-Trichloroethane	71-55-6	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Carbon Tetrachloride	56-23-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Bromodichloromethane	75-27-4	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,2-Dichloropropane	78-87-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Trichloroethene	79-01-6	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Dibromochloromethane	124-48-1	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,1,2-Trichloroethane	79-00-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Benzene	71-43-2	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Bromoform	75-25-2	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
4-Methyl-2-Pentanone (MIBK)	108-10-1	QCBLK206144-1	08/31/99	08/31/99	27	UG/KG	U	27	1
2-Hexanone	591-78-6	QCBLK206144-1	08/31/99	08/31/99	27	UG/KG	U	27	1
Tetrachloroethene	127-18-4	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Toluene	108-88-3	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Chlorobenzene	108-90-7	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
EthylBenzene	100-41-4	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Styrene	100-42-5	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Xylene (total)	1330-20-7	QCBLK206144-1	08/31/99	08/31/99	7	UG/KG	U	7	1
Bromofluorobenzene	460-00-4	QCBLK206144-1	08/31/99	08/31/99	103	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206144-1	08/31/99	08/31/99	121	%REC			1
Toluene-d8	2037-26-5	QCBLK206144-1	08/31/99	08/31/99	107	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK206144-1	08/31/99	08/31/99	142	%REC			1
Trichloroethene	79-01-6	QCBLK206144-1	08/31/99	08/31/99	99	%REC			1
Benzene	71-43-2	QCBLK206144-1	08/31/99	08/31/99	106	%REC			1
Toluene	108-88-3	QCBLK206144-1	08/31/99	08/31/99	107	%REC			1
Chlorobenzene	108-90-7	QCBLK206144-1	08/31/99	08/31/99	105	%REC			1
Bromofluorobenzene	460-00-4	QCBLK206144-1	08/31/99	08/31/99	93	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206144-1	08/31/99	08/31/99	118	%REC			1
Toluene-d8	2037-26-5	QCBLK206144-1	08/31/99	08/31/99	110	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Volatiles
Method: SW846 8260A
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK206144-1	08/31/99	08/31/99	129	%REC			1
Trichloroethene	79-01-6	QCBLK206144-1	08/31/99	08/31/99	98	%REC			1
Benzene	71-43-2	QCBLK206144-1	08/31/99	08/31/99	110	%REC			1
Toluene	108-88-3	QCBLK206144-1	08/31/99	08/31/99	108	%REC			1
Chlorobenzene	108-90-7	QCBLK206144-1	08/31/99	08/31/99	108	%REC			1
Bromofluorobenzene	460-00-4	QCBLK206144-1	08/31/99	08/31/99	107	%REC			1
Dibromofluoromethane	1868-53-7	QCBLK206144-1	08/31/99	08/31/99	130	%REC			1
Toluene-d8	2037-26-5	QCBLK206144-1	08/31/99	08/31/99	113	%REC			1

Data is incomplete without Case Narrative

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02879~~ W0296 from 2-11-2000

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ESMP9155

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 Date Analyzed: 08/31/99

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(mL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	27	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Chlorodibromomethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-pentanone	27	U
591-78-6	2-Hexanone	27	U
127-18-4	Tetrachloroethene	7	U
108-88-3	Toluene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Xylenes (total)	7	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02879~~ W02916 from 2.11.2000

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ESMP9155

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 Date Analyzed: 08/31/99

GC Column: RTX-502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(mL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
bis(2-Chloroethyl)Ether	111-44-4	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Chlorophenol	95-57-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
1,3-Dichlorobenzene	541-73-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
1,4-Dichlorobenzene	106-46-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
1,2-Dichlorobenzene	95-50-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Methylphenol	95-48-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,2'-oxybis (1-Chloropropane)	108-60-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
N-nitroso-di-n-propylamine	621-64-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Methylphenol	106-44-5	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Hexachloroethane	67-72-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Nitrobenzene	98-95-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Isophorone	78-59-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Nitrophenol	88-75-5	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,4-Dimethylphenol	105-67-9	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
bis(2-Chloroethoxy)Methane	111-91-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,4-Dichlorophenol	120-83-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
1,2,4-Trichlorobenzene	120-82-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Naphthalene	91-20-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Chloroaniline	106-47-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Hexachlorobutadiene	87-68-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Chloro-3-Methylphenol	59-50-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Methylnaphthalene	91-57-6	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Hexachlorocyclopentadiene	77-47-4	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
2,4,6-Trichlorophenol	88-06-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,4,5-Trichlorophenol	95-95-4	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Chloronaphthalene	91-58-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Nitroaniline	88-74-4	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
Acenaphthylene	208-96-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,6-Dinitrotoluene	606-20-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
3-Nitroaniline	99-09-2	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
Acenaphthene	83-32-9	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2,4-Dinitrophenol	51-28-5	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
Dibenzofuran	132-64-9	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Nitrophenol	100-02-7	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
2,4-Dinitrotoluene	121-14-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Fluorene	86-73-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
DimethylPhthalate	131-11-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Diethylphthalate	84-66-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Chlorophenyl-PhenylEther	7005-72-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Nitroaniline	100-01-6	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
4,6-Dinitro-2-Methylphenol	534-52-1	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
n-Nitrosodiphenylamine	86-30-6	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
4-Bromophenyl-Phenyl Ether	101-55-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Hexachlorobenzene	118-74-1	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Pentachlorophenol	87-86-5	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
Phenanthrene	85-01-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Anthracene	120-12-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Di-N-Butylphthalate	84-74-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Fluoranthene	206-44-0	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Pyrene	129-00-0	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
ButylBenzylPhthalate	85-68-7	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Benzo(a)Anthracene	56-55-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
3,3'-Dichlorobenzidine	91-94-1	QCBLK205969-1	08/30/99	08/31/99	2200	UG/KG	U	2200	1
Chrysene	218-01-9	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
bis(2-Ethylhexyl)Phthalate	117-81-7	QCBLK205969-1	08/30/99	08/31/99	64	UG/KG	BJ	440	1
di-N-OctylPhthalate	117-84-0	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Benzo(b)Fluoranthene	205-99-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Benzo(k)Fluoranthene	207-08-9	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Benzo(a)Pyrene	50-32-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 10/04/99

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Carbazole	86-74-8	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK205969-1	08/30/99	08/31/99	440	UG/KG	U	440	1
2-Fluorophenol	367-12-4	QCBLK205969-1	08/30/99	08/31/99	62	%REC			1
Phenol-d5	4165-62-2	QCBLK205969-1	08/30/99	08/31/99	66	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK205969-1	08/30/99	08/31/99	72	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK205969-1	08/30/99	08/31/99	66	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK205969-1	08/30/99	08/31/99	82	%REC			1
Terphenyl-d14	1718-51-0	QCBLK205969-1	08/30/99	08/31/99	74	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK205969-1	08/30/99	08/31/99	60	%REC			1
2-Chlorophenol	95-57-8	QCBLK205969-1	08/30/99	08/31/99	70	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK205969-1	08/30/99	08/31/99	71	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK205969-1	08/30/99	08/31/99	74	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK205969-1	08/30/99	08/31/99	75	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK205969-1	08/30/99	08/31/99	85	%REC			1
Acenaphthene	83-32-9	QCBLK205969-1	08/30/99	08/31/99	81	%REC			1
4-Nitrophenol	100-02-7	QCBLK205969-1	08/30/99	08/31/99	105	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK205969-1	08/30/99	08/31/99	95	%REC			1
Pentachlorophenol	87-86-5	QCBLK205969-1	08/30/99	08/31/99	99	%REC			1
Pyrene	129-00-0	QCBLK205969-1	08/30/99	08/31/99	92	%REC			1
2-Fluorophenol	367-12-4	QCBLK205969-1	08/30/99	08/31/99	72	%REC			1
Phenol-d5	4165-62-2	QCBLK205969-1	08/30/99	08/31/99	71	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK205969-1	08/30/99	08/31/99	80	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK205969-1	08/30/99	08/31/99	75	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK205969-1	08/30/99	08/31/99	90	%REC			1
Terphenyl-d14	1718-51-0	QCBLK205969-1	08/30/99	08/31/99	74	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Semivolatile
Method: SW846 8270C
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Phenol	108-95-2	QCBLK205969-1	08/30/99	09/01/99	53	%REC			1
2-Chlorophenol	95-57-8	QCBLK205969-1	08/30/99	09/01/99	61	%REC			1
1,4-Dichlorobenzene	106-46-7	QCBLK205969-1	08/30/99	09/01/99	63	%REC			1
N-nitroso-di-n-propylamine	621-64-7	QCBLK205969-1	08/30/99	09/01/99	61	%REC			1
1,2,4-Trichlorobenzene	120-82-1	QCBLK205969-1	08/30/99	09/01/99	66	%REC			1
4-Chloro-3-Methylphenol	59-50-7	QCBLK205969-1	08/30/99	09/01/99	67	%REC			1
Acenaphthene	83-32-9	QCBLK205969-1	08/30/99	09/01/99	69	%REC			1
4-Nitrophenol	100-02-7	QCBLK205969-1	08/30/99	09/01/99	84	%REC			1
2,4-Dinitrotoluene	121-14-2	QCBLK205969-1	08/30/99	09/01/99	74	%REC			1
Pentachlorophenol	87-86-5	QCBLK205969-1	08/30/99	09/01/99	92	%REC			1
Pyrene	129-00-0	QCBLK205969-1	08/30/99	09/01/99	72	%REC			1
2-Fluorophenol	367-12-4	QCBLK205969-1	08/30/99	09/01/99	62	%REC			1
Phenol-d5	4165-62-2	QCBLK205969-1	08/30/99	09/01/99	61	%REC			1
Nitrobenzene-d5	4165-60-0	QCBLK205969-1	08/30/99	09/01/99	68	%REC			1
2-Fluorobiphenyl	321-60-8	QCBLK205969-1	08/30/99	09/01/99	66	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK205969-1	08/30/99	09/01/99	79	%REC			1
Terphenyl-d14	1718-51-0	QCBLK205969-1	08/30/99	09/01/99	54	%REC			1

Data is incomplete without Case Narrative

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITSL Case No.: SAS No.: SDG No.: ~~W02879~~ W02916 from 2-11-2000

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: KSMP2546

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 dec._____ Date Extracted: 08/30/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/31/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	440	U
111-44-4	Bis(2-chloroethyl)ether	440	U
95-57-8	2-Chlorophenol	440	U
541-73-1	1,3-Dichlorobenzene	440	U
106-46-7	1,4-Dichlorobenzene	440	U
95-50-1	1,2-Dichlorobenzene	440	U
95-48-7	2-Methylphenol	440	U
108-60-1	2,2-oxybis(1-Chloropropane)	440	U
621-64-7	N-Nitrosodinpropylamine	440	U
106-44-5	4-Methylphenol	440	U
67-72-1	Hexachloroethane	440	U
98-95-3	Nitrobenzene	440	U
78-59-1	Isophorone	440	U
88-75-5	2-Nitrophenol	440	U
105-67-9	2,4-Dimethylphenol	440	U
111-91-1	Bis(2-chloroethoxy)methane	440	U
120-83-2	2,4-Dichlorophenol	440	U
120-82-1	1,2,4-Trichlorobenzene	440	U
91-20-3	Naphthalene	440	U
106-47-8	4-Chloroaniline	440	U
87-68-3	Hexachlorobutadiene	440	U
59-50-7	4-Chloro-3-Methylphenol	440	U
91-57-6	2-Methylnaphthalene	440	U
77-47-4	Hexachlorocyclopentadiene	2200	U
88-06-2	2,4,6-Trichlorophenol	440	U
95-95-4	2,4,5-Trichlorophenol	440	U
91-58-7	2-Chloronaphthalene	440	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITSL Case No.: SAS No.: SDG No.: ~~W02879~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: KSMP2546

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 dec._____ Date Extracted: 08/30/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/31/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
88-74-4	2-Nitroaniline	2200	U
208-96-8	Acenaphthylene	440	U
606-20-2	2,6-Dinitrotoluene	440	U
99-09-2	3-Nitroaniline	2200	U
83-32-9	Acenaphthene	440	U
51-28-5	2,4-Dinitrophenol	2200	U
132-64-9	Dibenzofuran	440	U
100-02-7	4-Nitrophenol	2200	U
121-14-2	2,4-Dinitrotoluene	440	U
86-73-7	Fluorene	440	U
131-11-3	Dimethylphthalate	440	U
84-66-2	Diethylphthalate	440	U
7005-72-3	4-Chlorophenyl-phenylether	440	U
100-01-6	4-Nitroaniline	2200	U
534-52-1	4,6-Dinitro-2-methylphenol	2200	U
86-30-6	N-Nitrosodiphenylamine (1)	440	U
101-55-3	4-Bromophenyl-phenylether	440	U
118-74-1	Hexachlorobenzene	440	U
87-86-5	Pentachlorophenol	2200	U
85-01-8	Phenanthrene	440	U
120-12-7	Anthracene	440	U
84-74-2	Di-n-Butylphthalate	440	U
206-44-0	Fluoranthene	440	U
129-00-0	Pyrene	440	U
85-68-7	Butylbenzylphthalate	440	U
56-55-3	Benzo(a)Anthracene	440	U
91-94-1	3,3'-Dichlorobenzidine	2200	U

(1) - Cannot be separated from Diphenylamine

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITSL Case No.: SAS No.: SDG No.: ~~W02879~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: KSMP2546

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 dec._____ Date Extracted:08/30/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/31/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
218-01-9	Chrysene	440	U
117-81-7	bis(2-ethylhexyl)Phthalate	64	JB
117-84-0	Di-n-octylphthalate	440	U
205-99-2	Benzo(b)fluoranthene	440	U
207-08-9	Benzo(k)fluoranthene	440	U
50-32-8	Benzo(a)pyrene	440	U
193-39-5	Indeno(1,2,3-cd)pyrene	440	U
53-70-3	Dibenzo(a,h)anthracene	440	U
86-74-8	Carbazole	440	U
191-24-2	Benzo(g,h,i)perylene	440	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITSL Case No.: SAS No.: SDG No.: ~~W02879~~ W02916 2-11-2000

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: KSMP2546

Level: (low/med) LOW Date Received: 08/23/99

% Moisture: not dec. 26 dec._____ Date Extracted:08/30/99

Final Volume: 1000 Date Analyzed: 08/31/99

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1221	11104-28-2	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1232	11141-16-5	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1242	53469-21-9	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1248	12672-29-6	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1254	11097-69-1	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
Aroclor-1260	11096-82-5	QCBLK206040-1	08/31/99	08/31/99	45	UG/KG	U	45	1
TCMX	877-09-8	QCBLK206040-1	08/31/99	08/31/99	102	%REC			1
DCB	2051-24-3	QCBLK206040-1	08/31/99	08/31/99	111	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206040-1	08/31/99	08/31/99	95	%REC			1
Aroclor-1260	11096-82-5	QCBLK206040-1	08/31/99	08/31/99	106	%REC			1
TCMX	877-09-8	QCBLK206040-1	08/31/99	08/31/99	105	%REC			1
DCB	2051-24-3	QCBLK206040-1	08/31/99	08/31/99	115	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PCB's
Method: EPA 8082
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Aroclor-1016	12674-11-2	QCBLK206040-1	08/31/99	08/31/99	92	%REC			1
Aroclor-1260	11096-82-5	QCBLK206040-1	08/31/99	08/31/99	106	%REC			1
TCMX	877-09-8	QCBLK206040-1	08/31/99	08/31/99	95	%REC			1
DCB	2051-24-3	QCBLK206040-1	08/31/99	08/31/99	111	%REC			1

Data is incomplete without Case Narrative

FORM 1 Quanterra-Richland SAMPLE NO.

PCB ORGANICS ANALYSIS DATA SHEET

B0W5P8

Lab Name: QUANTERRA, ST. LOUIS MO Contract: 550.267

Lab Code: Case No.: SAS No.: SDG No.: ~~W02879~~ W02916

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: DB__679

% Moisture: 26 decanted: (Y/N) N Date Received: 08/23/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/31/99

Concentrated Extract Volume: 10 (mL) Date Analyzed: 08/31/99

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	45	U
11104-28-2	Aroclor-1221	45	U
1114-16-5	Aroclor-1232	45	U
53469-21-9	Aroclor-1242	45	U
12672-29-6	Aroclor-1248	45	U
11097-69-1	Aroclor-1254	45	U
11096-82-5	Aroclor-1260	45	U
37324-23-5	Aroclor-1262	45	U
11100-14-4	Aroclor-1268	45	U

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	34	MG/KG	U	34	1
Waste Oil	TPH/OILH	QCBLK206095-1	08/31/99	09/04/99	64	MG/KG		34	1
Miscellaneous Oil	MO-002	QCBLK206095-1	08/31/99	09/04/99	34	MG/KG	U	34	1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	88	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	82	%REC			1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	86	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: TPH
Method: EPA 8015
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Diesel	68334-30-5	QCBLK206095-1	08/31/99	09/04/99	70	%REC			1
o-Terphenyl	84-15-1	QCBLK206095-1	08/31/99	09/04/99	74	%REC			1

Data is incomplete without Case Narrative

FORM 1 Quanterra-Richland SAMPLE NO.

TPH ORGANICS ANALYSIS DATA SHEET

B0W5P8

Lab Name: QUANTERRA Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02879~~ W02916 2-11-2000

Matrix: (soil/water) SOIL Lab Sample ID: 21999-001TPH

Sample wt/vol: 20.0 (g/mL) G Lab File ID: FA__799

% Moisture: 26 decanted: (Y/N) N Date Received: 08/23/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:08/31/99

Concentrated Extract Volume: 5(ml) Date Analyzed: 09/04/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Diesel	34	U
	----------Waste Oil	64	
	----------Miscellaneous	34	U

FORM I TPH

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Mercury
Method: EPA 7471
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.13	MG/KG		0.045	1
B0W5P8	21999-001MS	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	119	%REC			1
B0W5P8	21999-001MSD	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	123	%REC			1
NA	QCLCS206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	109	%REC			1
NA	QCBLK206567-1	Mercury	7439-97-6	QCBLK206567-1	09/08/99	09/08/99	0.017	MG/KG	U	0.033	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	2.9	MG/KG	B	40.5	1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	65.7	MG/KG		27.0	1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	0.19	MG/KG	B	0.67	1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	0.88	MG/KG		0.67	1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	13.5	MG/KG		1.3	1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	53.9	MG/KG	N	3.4	1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	13.8	MG/KG		13.5	1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	7.0	MG/KG		5.4	1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	0.53	MG/KG	U	33.7	1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	0.09	MG/KG	U	1.3	1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	17.9	MG/KG		6.7	1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	112	MG/KG	N	2.7	1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	101	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	104	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	93	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	97	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	106	%REC			1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	96	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	96	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	89	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	91	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	110	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	170	%REC	N		1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: ICAP Metals
Method: EPA 6010
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 10/04/99

Quanterra ID : 21999-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Arsenic	7440-38-2	QCBLK206680-1	09/09/99	09/09/99	94	%REC			1
Barium	7440-39-3	QCBLK206680-1	09/09/99	09/09/99	107	%REC			1
Beryllium	7440-41-7	QCBLK206680-1	09/09/99	09/09/99	105	%REC			1
Cadmium	7440-43-9	QCBLK206680-1	09/09/99	09/09/99	99	%REC			1
Chromium	7440-47-3	QCBLK206680-1	09/09/99	09/09/99	108	%REC			1
Copper	7440-50-8	QCBLK206680-1	09/09/99	09/09/99	127	%REC	N		1
Lead	7439-92-1	QCBLK206680-1	09/09/99	09/09/99	103	%REC			1
Nickel	7440-02-0	QCBLK206680-1	09/09/99	09/09/99	100	%REC			1
Selenium	7782-49-2	QCBLK206680-1	09/09/99	09/09/99	91	%REC			1
Silver	7440-22-4	QCBLK206680-1	09/09/99	09/09/99	92	%REC			1
Vanadium	7440-62-2	QCBLK206680-1	09/09/99	09/09/99	107	%REC			1
Zinc	7440-66-6	QCBLK206680-1	09/09/99	09/09/99	199	%REC	N		1

Data is incomplete without Case Narrative

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO_____ Contract: 550.267___

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: ~~W02879~~ W02916 from 2-11-2000

SOW No.: SW846

EPA Sample No.	Lab Sample ID
B0W5P8	21999-001
B0W5P8SD	21999-001SD
B0W5P8S	21999-001S

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:

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: _____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0W5P8

Lab Name: QUANTERRA MO Contract: 550.267

Lab Code: ITMO Case No.: SAS No.: SDG No.: ~~W02879~~ W02916

Matrix (soil/water): SOIL Lab Sample ID: 21999-001

Level (low/med): LOW Date Received: 08/23/99

% Solids: 74.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.9	B		P
7440-39-3	Barium	65.7			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.88			P
7440-47-3	Chromium	13.5			P
7440-50-8	Copper	53.9		N	P
7439-92-1	Lead	13.8			P
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel	7.0			P
7782-49-2	Selenium	0.53	U		P
7440-22-4	Silver	0.09	U		P
7440-62-2	Vanadium	17.9			P
7440-66-6	Zinc	112		N	P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

FORM I - IN

SW-846

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: AMMONIA
Method: EPA 350.1
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	65.6	MG/KG		6.7	10
B0W5P8	21999-001DUP	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	69.4	MG/KG		6.7	10
B0W5P8	21999-001MS	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	244	%REC	*		10
NA	QCBLK207144-1	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	0.50	MG/KG	U	0.50	1
NA	QCLCS207144-1	Ammonia	NH3-N	QCBLK207144-1	09/16/99	09/16/99	96	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: CYANIDE
Method: EPA 9010
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Cyanide	57-12-5	QCBLK206074-1	08/31/99	09/01/99	0.66	MG/KG	U	0.66	1
B0W5P8	21999-001DUP	Cyanide	57-12-5	QCBLK206074-1	08/31/99	09/01/99	0.64	MG/KG	U	0.64	1
B0W5P8	21999-001MS	Cyanide	57-12-5	QCBLK206074-1	08/31/99	09/01/99	97	%REC			1
NA	QCBLK206074-1	Cyanide	57-12-5	QCBLK206074-1	08/31/99	09/01/99	0.50	MG/KG	U	0.50	1
NA	QCLCS206074-1	Cyanide	57-12-5	QCBLK206074-1	08/31/99	09/01/99	102	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	3.45	MG/KG		0.13	1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	12.4	MG/KG		0.27	1
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	0.22	MG/KG	B	0.09	1
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	115	MG/KG		2.95	20
O-phosphate-P	14265-44-2	QCBLK207492-1	09/15/99	09/15/99	2.76	MG/KG	B	0.47	1
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	1437	MG/KG		29.0	20

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID: B0W5P8

Quanterra ID : 21999-001DUP

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	2.69	MG/KG		0.13	1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	11.4	MG/KG		0.27	1
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	0.21	MG/KG	B	0.09	1
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	106	MG/KG		2.95	20
O-phosphate-P	14265-44-2	QCBLK207492-1	09/15/99	09/15/99	0.47	MG/KG	U	0.47	1
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	1292	MG/KG		1.45	20

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Client ID: B0W5P8

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Quanterra ID : 21999-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Fluoride	16984-48-8	QCBLK207492-1	09/15/99	09/15/99	104	%REC			1
Chloride	16887-00-6	QCBLK207492-1	09/15/99	09/15/99	128	%REC	*		10
Nitrite	NO2-N	QCBLK207492-1	09/15/99	09/15/99	145	%REC	*		10
Nitrate	NO3-N	QCBLK207492-1	09/15/99	09/15/99	162	%REC	*		20
Sulfate	14808-79-8	QCBLK207492-1	09/15/99	09/15/99	266	%REC	*		20

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Anions
Method: EPA 300.0
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001MS	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	76	%REC			1
NA	QCBLK207854-1	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	0.35	MG/KG	U	0.35	1
NA	QCLCS207854-1	O-phosphate-P	14265-44-2	QCBLK207854-1	09/23/99	09/23/99	98	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: Hexavalent Chromium
Method: SW846 7196
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.13	UG/G	U	0.13	1
B0W5P8	21999-001DUP	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.13	UG/G	U	0.13	1
B0W5P8	21999-001MS	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	87	%REC			1
NA	QCBLK207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	0.10	UG/G	U	0.10	1
NA	QCLCS207574-1	Hexavalent Chro	18540-29-9	QCBLK207574-1	09/17/99	09/17/99	89	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: NO3-NO2
Method: EPA 353.1
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	141	MG/KG		33.7	50
B0W5P8	21999-001DUP	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	140	MG/KG		33.7	50
B0W5P8	21999-001MS	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	300	%REC	*		50
NA	QCBLK207145-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	0.50	MG/KG	U	0.50	1
NA	QCLCS207145-1	Nitrate/Nitrite	NO2+NO3-N	QCBLK207145-1	09/16/99	09/16/99	104	%REC			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: pH
Method: EPA 9045
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	pH	PH	QCBLK205859-2	08/27/99	08/27/99	3.55	PH			1
B0W5P8	21999-001DUP	pH	PH	QCBLK205859-2	08/27/99	08/27/99	3.52	PH			1

Analysis time for sample 21999-001 is 14:57.
Analysis time for sample 21999-001DUP is 14:58.
Analysis time for sample QCBLK205859-1 is 14:56.

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: PH/9045/Q4
Method: SW-846 9045C
Matrix: SOLID

Sample Date : NA
Receipt Date : NA
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
NA	QCBLK205859-2	pH	PH	QCBLK205859-2	08/27/99	08/27/99	5.71	PH			1

Data is incomplete without Case Narrative

Bechtel Hanford Inc.
3350 George Washington Way
MSIN H9-03
Richland, WA 99352-1613

Project: Bechtel Hanford Inc.

Category: SULFIDE
Method: EPA 9030
Matrix: SOLID

Sample Date : 08/19/99
Receipt Date : 08/23/99
Report Date : 09/29/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0W5P8	21999-001	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	46.7	UG/G		26.0	1
B0W5P8	21999-001DUP	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	26.5	UG/G	U	26.5	1
B0W5P8	21999-001MS	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	38	%REC			1
NA	QCBLK206855-1	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	20.0	UG/G	U	20.0	1
NA	QCLCS206855-1	Sulfide	18496-25-8	QCBLK206855-1	09/27/99	09/27/99	112	%REC			1

Data is incomplete without Case Narrative