Quanterra

Quanterra
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CERTIFICATE OF ANALYSIS

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

RECEIVED
APR 11 2000
EDMC

March 10, 2000

Attention: Joan Kessner

SAF Number	:	B99-042
Date SDG Closed	:	February 17, 2000
Number of Samples	:	Three (3)
Sample Type	:	Soil
SDG Number	:	W03087
Data Deliverable	:	21-Day / Summary

MAR 2000 RECEIVED Data Log In

I. Introduction

On February 17, 2000, three soil samples were received at the Quanterra Richland Laboratory (QRL) for radiochemical and chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QRL ID#	BHI ID#	MATRIX	DATE OF RECEIPT
9D8NVL10	B0X4T9	SOIL	2/17/00
9D8NW910	B0VLW7	SOIL	2/17/00
9D8NWF10	B0X4T2	SOIL	2/17/00

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010
Uranium-234, -235, -238 by method RICH-RC-5079
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017

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

III. Quality Control

The analytical results for each analysis performed under SDG W03087 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 with exception of the chemical analyses reported in mg/L.

IV. Comments

Alpha Spectroscopy
Plutonium-238, -239/40 by method RICH-RC-5010
The LCS, batch blank, sample duplicate (B0VLW7) and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079
The LCS, batch blank, sample duplicate (B0X4T2) and sample results are within contractual requirements.

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
The LCS, batch blank, sample duplicate (B0VLW7) and sample results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006
The LCS, batch blank, sample duplicate (B0X4T9) and sample results are within contractual requirements.

Liquid Scintillation Counting
Nickel-63 by method RICH-RC-5069:
The LCS and batch blank vials were switched during analysis due to a technician error. The QC identifications were corrected for calculation. Except as noted, the LCS, batch blank, samples,

sample duplicate (B0X4T9) and sample matrix spike (B0X4T9) results are within contractual requirements.

Chemical Analyses

Chromium Hex by EPA method 7196

The LCS, batch blank, sample, sample duplicate (B0X4T9) and sample matrix spike (B0X4T9) 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:**	W03087 / 9978
LAB SAMPLE ID:	9D8NVL10	**MATRIX:**	SOIL
CLIENT ID:	B0X4T9	**DATE RECEIVED:**	2/17/2000 11:50:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	8.00E-02	U	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196
PU-238	0.00E+00	U	0.0E+00	1.7E-02	1.91E-02	pCi/g	44.41%	RICHRC5010
PU239/40	7.05E-03	U	1.4E-02	1.4E-02	1.91E-02	pCi/g	44.41%	RICHRC5010
U-234	6.98E-01	J	1.3E-01	1.8E-01	2.25E-02	pCi/g	73.60%	RICHRC5079
U-235	2.06E-02	U	2.2E-02	2.3E-02	2.99E-02	pCi/g	73.60%	RICHRC5079
U-238	6.96E-01	J	1.3E-01	1.8E-01	3.32E-02	pCi/g	73.60%	RICHRC5079
CO-60	1.06E-02	U	1.2E-02	1.2E-02	2.22E-02	pCi/g		RICHRC5017
CS-137	8.83E-02		2.3E-02	2.3E-02	2.11E-02	pCi/g		RICHRC5017
EU-152	-2.97E-02	U	4.5E-02	4.5E-02	5.08E-02	pCi/g		RICHRC5017
EU-154	-2.11E-02	U	4.0E-02	4.0E-02	6.54E-02	pCi/g		RICHRC5017
EU-155	2.41E-03	U	3.4E-02	3.4E-02	5.68E-02	pCi/g		RICHRC5017
STRONTIUM	1.66E-01	J	8.0E-02	9.3E-02	1.49E-01	pCi/g	75.70%	RICHRC5006
NI-63	1.02E+00	U	5.8E-02	9.2E-01	1.42E+00	pCi/g	85.66%	RICHRC5069

Number of Results: 13

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SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	**SDG: /RPT GRP:**	W03087 / 9978
LAB SAMPLE ID:	9D8NW910	**MATRIX:**	SOIL
CLIENT ID:	B0VLW7	**DATE RECEIVED:**	2/17/2000 11:50:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	8.00E-02	U	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196
PU-238	0.00E+00	U	0.0E+00	4.1E-02	4.53E-02	pCi/g	38.84%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	4.1E-02	4.53E-02	pCi/g	38.84%	RICHRC5010
U-234	6.60E-01	J	1.8E-01	2.2E-01	9.61E-02	pCi/g	78.07%	RICHRC5079
U-235	6.26E-03	U	2.5E-02	2.5E-02	7.15E-02	pCi/g	78.07%	RICHRC5079
U-238	5.66E-01	J	1.7E-01	2.0E-01	8.98E-02	pCi/g	78.07%	RICHRC5079
CO-60	-1.30E-02	U	1.3E-02	1.3E-02	1.98E-02	pCi/g		RICHRC5017
CS-137	-1.46E-02	U	1.4E-02	1.4E-02	2.22E-02	pCi/g		RICHRC5017
EU-152	-4.43E-02	U	3.6E-02	3.6E-02	5.75E-02	pCi/g		RICHRC5017
EU-154	-7.84E-03	U	4.1E-02	4.1E-02	6.90E-02	pCi/g		RICHRC5017
EU-155	1.36E-02	U	3.3E-02	3.3E-02	5.57E-02	pCi/g		RICHRC5017
STRONTIUM	-2.06E-02	U	1.0E-01	1.0E-01	2.53E-01	pCi/g	86.50%	RICHRC5006
NI-63	5.92E+00	U	3.5E-01	5.6E+00	9.19E+00	pCi/g	92.39%	RICHRC5069

Number of Results: 13

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:	W03087 / 9978
LAB SAMPLE ID:	9D8NWF10	MATRIX:	SOIL
CLIENT ID:	B0X4T2	DATE RECEIVED:	2/17/2000 11:50:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	3.60E-01		N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196
PU-238	0.00E+00	U	0.0E+00	1.5E-02	1.62E-02	pCi/g	51.50%	RICHRC5010
PU239/40	1.20E-02	U	1.7E-02	1.7E-02	1.62E-02	pCi/g	51.50%	RICHRC5010
U-234	8.96E-01	J	1.5E-01	2.2E-01	3.65E-02	pCi/g	66.60%	RICHRC5079
U-235	6.21E-02	J	4.1E-02	4.2E-02	3.65E-02	pCi/g	66.60%	RICHRC5079
U-238	8.20E-01	J	1.5E-01	2.1E-01	2.95E-02	pCi/g	66.60%	RICHRC5079
CO-60	6.83E-03	U	1.2E-02	1.2E-02	2.17E-02	pCi/g		RICHRC5017
CS-137	1.10E-01		3.3E-02	3.3E-02	2.05E-02	pCi/g		RICHRC5017
EU-152	-3.16E-02	U	3.3E-02	3.3E-02	5.42E-02	pCi/g		RICHRC5017
EU-154	1.56E-02	U	3.9E-02	3.9E-02	6.83E-02	pCi/g		RICHRC5017
EU-155	5.77E-02	U	3.1E-02	3.1E-02	5.35E-02	pCi/g		RICHRC5017
STRONTIUM	1.44E-02	U	5.9E-02	5.9E-02	1.37E-01	pCi/g	79.70%	RICHRC5006
NI-63	9.66E-02	U	6.0E-03	1.0E+00	1.77E+00	pCi/g	78.67%	RICHRC5069

Number of Results: 13

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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W03087 / 9978
LAB SAMPLE ID:	D8NVL19R	MATRIX:	SOIL
CLIENT ID:	B0X4T9	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NVL10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	7.58E-01	U	4.4E-02	1.1E+00	1.69E+00	pCi/g	78.29%	RICHRC5069	1.02E+00	29.30%

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:	W03087 / 9978
LAB SAMPLE ID:	D8NVL1AR	MATRIX:	SOIL
CLIENT ID:	B0X4T9	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NVL10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	1.19E-01	U	7.4E-02	8.1E-02	1.43E-01	pCi/g	72.90%	RICHRC5006	1.66E-01	33.08%

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:	W03087 / 9978
LAB SAMPLE ID:	D8NVL1DR	MATRIX:	OTHER
CLIENT ID:	B0X4T9	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NVL10		

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

Number of Results: 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:	W03087 / 9978
LAB SAMPLE ID:	D8NW918R	MATRIX:	SOIL
CLIENT ID:	B0VLW7	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NW910		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	0.00E+00	U	0.0E+00	3.7E-02	4.14E-02	pCi/g	42.31%	RICHRC5010	0.00E+00	0.00%
PU239/40	-2.44E-03	U	3.5E-03	3.5E-03	6.98E-02	pCi/g	42.31%	RICHRC5010	0.00E+00	200.00%

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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DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W03087 / 9978
LAB SAMPLE ID:	D8NW919R	MATRIX:	SOIL
CLIENT ID:	B0VLW7	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NW910		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	-7.68E-03	U	1.2E-02	1.2E-02	1.98E-02	pCi/g		RICHRC5017	-1.30E-02	51.39%
CS-137	2.28E-03	U	1.2E-02	1.2E-02	2.05E-02	pCi/g		RICHRC5017	-1.46E-02	274.11%
EU-152	-1.68E-03	U	3.9E-02	3.9E-02	5.04E-02	pCi/g		RICHRC5017	-4.43E-02	185.38%
EU-154	-2.84E-02	U	3.8E-02	3.8E-02	6.26E-02	pCi/g		RICHRC5017	-7.84E-03	113.43%
EU-155	5.39E-02	U	4.0E-02	4.0E-02	6.59E-02	pCi/g		RICHRC5017	1.36E-02	119.63%

Number of Results: 5

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:	W03087 / 9978
LAB SAMPLE ID:	D8NWF18R	MATRIX:	SOIL
CLIENT ID:	B0X4T2	DATE RECEIVED:	2/17/2000 11:50:00
ORIG LAB SAMPLE ID:	9D8NWF10		

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	8.57E-01	J	1.4E-01	2.1E-01	3.95E-02	pCi/g	76.98%	RICHRC5079	8.96E-01	4.47%
U-235	4.46E-02	J	3.3E-02	3.3E-02	2.87E-02	pCi/g	76.98%	RICHRC5079	6.21E-02	32.82%
U-238	8.47E-01	J	1.4E-01	2.1E-01	3.56E-02	pCi/g	76.98%	RICHRC5079	8.20E-01	3.21%

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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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03087 / 9978

LAB SAMPLE ID: D8PV111B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	8.05E-01	U	4.7E-02	8.4E-01	1.31E+00	pCi/g	97.92%	RICHRC5069

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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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03087 / 9978

LAB SAMPLE ID: D8PV311B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-4.41E-04	U	8.8E-04	8.8E-04	2.22E-02	pCi/g	63.10%	RICHRC5010
PU239/40	0.00E+00	U	0.0E+00	1.3E-02	1.49E-02	pCi/g	63.10%	RICHRC5010

Number of Results: 2

Result = IDL When Not Detected

(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: W03087 / 9978

LAB SAMPLE ID: D8PV411B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	-2.25E-03	U	1.8E-03	1.9E-03	2.79E-02	pCi/g	87.00%	RICHRC5079
U-235	-7.52E-04	U	1.1E-03	1.1E-03	2.15E-02	pCi/g	87.00%	RICHRC5079
U-238	-3.38E-03	U	2.3E-03	2.3E-03	3.13E-02	pCi/g	87.00%	RICHRC5079

Number of Results: 3

Result = IDL When Not Detected

(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:	W03087 / 9978
LAB SAMPLE ID:	D8PV511B	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	-2.00E-02	U	4.4E-02	4.5E-02	1.13E-01	pCi/g	93.90%	RICHRC5006

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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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03087 / 9978

LAB SAMPLE ID: D8PV711B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
CO-60	-1.34E-03	U	6.8E-03	6.8E-03	1.19E-02	pCi/g		RICHRC5017
CS-137	8.02E-04	U	7.2E-03	7.2E-03	1.26E-02	pCi/g		RICHRC5017
EU-152	-2.18E-03	U	1.9E-02	1.9E-02	3.14E-02	pCi/g		RICHRC5017
EU-154	3.45E-03	U	2.2E-02	2.2E-02	3.85E-02	pCi/g		RICHRC5017
EU-155	2.24E-03	U	1.5E-02	1.5E-02	2.63E-02	pCi/g		RICHRC5017

Number of Results: 5

Result = IDL When Not Detected

(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:	W03087 / 9978
LAB SAMPLE ID:	D8TEF11B	MATRIX:	SOIL

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

Number of Results: 1

Result = IDL When Not Detected

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

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LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W03087 / 9978
LAB SAMPLE ID:	D8PV112S	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
Ni-63	1.10E+02		1.8E+00	8.2E+00	1.35E+00	pCi/g	98.66%	1.27E+02	86.55%

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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LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W03087 / 9978
LAB SAMPLE ID:	D8PV312S	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
PU239/40	3.38E+00		3.8E-01	7.7E-01	5.22E-02	pCi/g	39.24%	3.40E+00	99.31%

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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LABORATORY CONTROL SAMPLE

LAB NAME:	QUANTERRA, Richland	SDG: /RPT GRP:	W03087 / 9978
LAB SAMPLE ID:	D8PV412S	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	9.08E-01	J	1.4E-01	2.1E-01	2.56E-02	pCi/g	76.54%	8.70E-01	104.39%
U-235	2.71E-02	J	2.5E-02	2.6E-02	2.56E-02	pCi/g	76.54%	3.97E-02	68.43%
U-238	9.07E-01	J	1.4E-01	2.1E-01	3.00E-02	pCi/g	76.54%	9.11E-01	99.58%

Number of Results: 3

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:	W03087 / 9978
LAB SAMPLE ID:	D8PV512S	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	9.41E-01	J	1.2E-01	2.9E-01	1.22E-01	pCi/g	94.10%	1.14E+00	82.58%

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:	W03087 / 9978
LAB SAMPLE ID:	D8PV712S	MATRIX:	SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.15E-01		4.9E-02	4.9E-02	3.30E-02	pCi/g		3.07E-01	102.50%
K-40	2.03E+01		2.2E+00	2.2E+00	2.52E-01	pCi/g		1.95E+01	103.75%
RA-226	1.00E+00		1.3E-01	1.3E-01	5.86E-02	pCi/g		1.15E+00	86.93%
RA-228	2.24E+00		2.8E-01	2.8E-01	1.04E-01	pCi/g		1.87E+00	119.35%
U-238DHP	1.54E+00		6.0E-01	6.0E-01	6.25E-01	pCi/g		1.05E+00	146.86%

Number of Results: 5

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:	W03087 / 9978
LAB SAMPLE ID:	D8TEF12S	MATRIX:	OTHER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	9.31E-01		N/A	N/A	2.00E-03	mg/L	N/A	1.00E+00	93.10%

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:	W03087 / 9978
LAB SAMPLE ID:	D8NVL18W	MATRIX:	SOIL

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	1.27E+02		2.1E+00	9.5E+00	1.54E+00	pCi/g	1.02E+00	1.32E+02	96.63%

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:	W03087 / 9978
LAB SAMPLE ID:	D8NVL1CW	MATRIX:	SOIL

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	3.74E+01		N/A	N/A	8.00E-02	mg/kg	8.00E-02	4.00E+01	93.70%

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:	W03087 / 9978
LAB SAMPLE ID:	D8NVL1EW	MATRIX:	OTHER

ANALYTE	SPIKE RESULT*	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	6.62E+02		N/A	N/A	8.00E-02	mg/kg	8.00E-02	6.88E+02	96.19%

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

W. 21058

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-008	Page 1 of 1

Collector: Stankovich/ Trice / Nielson / Winterose	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	Air Quality
Ice Chest No.: ERC-99-071	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: Hand Deliver	
Shipped To: Quanterra Incorporated	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: SDC W03087 — Due 3-10 — JOB170228

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation: Cool 4C	None	None	None	Cool 4C	Cool 4C	None			
				Type of Container: aG	aG	aG	aG	aG	aG	P			
				No. of Container(s): 1	1	1	1	1	1	1			
				Volume: 60mL	60mL	60mL 125	60mL 250	120mL 250	120mL 250	1000mL			
						Chromium Hex - 7196 ✓	See item (1) in Special Instructions	Isotopic Plutonium, Isotopic Uranium ✓	Strontium-89,90 -- Total Sr, Nickel-63 ✓	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions ✓			
✓ B0X4T9 D8NVL	Soil	2-16-00	1040	✓	✓	✓	✓	✓	✓	✓			A-1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kile/Nielson/K Nielson	2/16/00 (1040)	Ref #2A	
Ref #2A	2.17.00/0800	RIKKI THORON / R. Thoron	2.17.00/0800
RIKKI THORON / R. Thoron	2.17.00/1150	R. Albenling	2-17-00 1150

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sample originated in non RAD controlled area. <200 pci/g NOTA Required.

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-004	Page 1 of 1

Collector Stankovich/ Trice / Nielson /	**Company Contact** Stankovich **Telephone No.** 531-7620	**Project Coordinator** TRENT, SJ	**Price Code** 8L **Data Turnaround** 21 Days
Project Designation 100 H Area - Full Protocol	**Sampling Location** 1607 H2	**SAF No.** B99-042	**Air Quality**
Ice Chest No. ERC 99-071	**Field Logbook No.** EL-1500-1 **COA** R6071H22600	**Method of Shipment** Hand Deliver	
Shipped To Quanterra Incorporated	**Offsite Property No.** NA	**Bill of Lading/Air Bill No.** NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

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	P			
No. of Container(s)			1	1	1	1	1	1	1			
Volume			60mL	60mL	60mL	60mL	120mL	120mL	1000mL			
SAMPLE ANALYSIS			Chromium Hex - 7196	See item (1) in Special Instructions	Isotopic Plutonium, Isotopic Uranium	Strontium-89,90 -- Total Sr, Nickel-63	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time									
B0VLW7 08NW9	Soil	2-16-00	1255	X	X	X	X	X	X	X		

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

Relinquished By	Date/Time	Received By	Date/Time
D.W. Nielson / R. Nielson	2/16/00 1700	Ref 2A	
Ref 2A	2-17-00/0800	R. Thorson	2-17-00/0800
R. Thorson	2-17-00/1150	K. Ulenburg	2-17-00 1150

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sample originates in non RAD controlled area. <2000 pCi/g No TA Required

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-006	Page 1 of 1

Collector Stankovich/ Trice / Nielson	**Company Contact** Stankovich **Telephone No.** 531-7620	**Project Coordinator** TRENT, SJ	**Price Code** 8L **Data Turnaround** 21 Days
Project Designation 100 H Area - Full Protocol	**Sampling Location** 1607 H2	**SAF No.** B99-042	**Air Quality**
Ice Chest No. ERC 99-071	**Field Logbook No.** EL-1500-1 **COA** R607H22600	**Method of Shipment** Hand Deliver	
Shipped To Quanterra Incorporated	**Offsite Property No.** NA	**Bill of Lading/Air Bill No.** NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

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	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	~~60mL~~ 125	~~60mL~~ 250	~~60mL~~ 250	~~120mL~~ 250	1000mL			
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions	Isotopic Plutonium, Isotopic Uranium	Strontium-89,90 -- Total Sr, Nickel-63	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0X4T2 D8NWF	Soil	2-16-00	1115	X	X	X	X	X	X	X			

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

Relinquished By	Date/Time	Received By	Date/Time
Alice Nielson / R Nielson	2/16/00 1700	Ref #2A	
Ref 2A	2-17-00/0100	Rikki Thorson / R. Thorson	2-17-00/0100
Rikki Thorson / R. Thorson	2-17-00/1150	R. Lichtenberg	2-17-00 1150

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Sample originates in non RAD Controlled area. <2000 pCi/g. NOTA Required

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

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

BHI-EE-011 (10/99)

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

MAR 2000
RECEIVED
Data
Log In

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

March 16, 2000

Attention: Joan Kessner

Project Number	:	34666
SDG	:	W03087
Number of Samples	:	Three (3)
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	February 17, 2000

II. Introduction

On February 17, 2000, three (3) "soil" samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at the St. Louis lab on 2/18/00 at 2 degrees C. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

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 – 6010 Super Trace {As, Cr, Pb,}
Mercury – 7471 (CV)
BNA – 8270C (TCL)
PCB - 8082

Deviation from Request: None

Quanterra

Bechtel Hanford Incorporated
March 16, 2000
Project Number: 34666
SDG: ~~W03067~~ WD3087
Page 2

IV. Definitions

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

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
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.

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.

The recoveries of the Mercury matrix spike (130.3%) and matrix spike duplicate (135.3%) were greater than 125%.

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

There were no comments or non-conformances associated with the PCB data.

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

Quanterra

Bechtel Hanford Incorporated
March 16, 2000
Project Number: 34666
SDG: W0306787 Dayes 3/21/2000
Page 3

In the MSD, pyrene was not within the QC limits. Since the result was biased high and the all the compounds in the MS and LCS are within the QC limits, the data was accepted.

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

SAMPLE SUMMARY

F0B180193

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D8QMW	001	B0X4T9	02/16/00	10:40
D8QNA	002	B0X4T2	02/16/00	11:15
D8QND	003	B0VLW7	02/16/00	12:55

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F0B180193

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
PCBs by SW-846 8082	SW846 8082	SW846 3550
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3550B
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PSL20300 QUANTERRA INCORPORATED Run Date: 2/18/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:27:13
Quanterra - St. Louis User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 34666
PROJECT MANAGER: MARTI WARD LAB ID: F-0B180193-001
PROJECT #: 100H AREA FULL WORK ORDER: D8QMW
REPORT TO: Joan Kessner RECEIVING DATE: 2/17/00
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 2/16/00
SITE: B99-042 ANALYTICAL DUE DATE: 3/07/00N
AMOUNT REC"D: 3X250G REPORT DUE DATE: 3/10/00
STORAGE LOC: S11E PRIORITY: 18
LOT COMMENTS: QC is billable SAMPLING TIME: 10:40
MATRIX: SOLID RECEIVING TIME: 11:50
SAMPLE ID: B0X4T9
QC PACKAGE: Special Report - see checklist SDG# : W03087
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	2/18/00	0/00/00	8/14/00
METALS, TOTAL - Soils				
MT6010_S AS,CR,PB				
(A-46-QM-01) D8QMW Protocol: A QC Program: STANDARD TEST SET				
Mercury (7471A, Cold Vapor) - Solids	06	2/18/00	0/00/00	3/15/00
METALS, TOTAL (Method Exclusive) - Solids				
M7471_S HG				
(A-70-09-01) D8QMW Protocol: A QC Program: STANDARD TEST SET				
Moisture, Percent (160.3)	06	2/18/00	0/00/00	5/25/00
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) D8QMW-1-0E Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	2/18/00	3/01/00	4/10/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) D8QMW-1-0F Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	2/18/00	3/01/00	4/10/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) D8QMW-1-0J Protocol: A QC Program: STANDARD TEST SET				

PSL20300 QUANTERRA INCORPORATED Run Date: 2/18/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:27:13
Quanterra - St. Louis User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 100H AREA FULL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B99-042
AMOUNT REC"D: 3X250G
STORAGE LOC: S11E
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0X4T9
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 34666
LAB ID: F-0B180193-001-D
WORK ORDER: D8QMW MSD
RECEIVING DATE: 2/17/00
SAMPLING DATE: 2/16/00
ANALYTICAL DUE DATE: 3/07/00N
REPORT DUE DATE: 3/10/00
PRIORITY: 18
SAMPLING TIME: 10:40
RECEIVING TIME: 11:50
SDG# : W03087

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	2/18/00	0/00/00	8/14/00
METALS, TOTAL - Soils				
MT6010_S AS,CR,PB				
(A-46-QM-01) D8QMW Protocol: A QC Program: STANDARD TEST SET				
Mercury (7471A, Cold Vapor) - Solids	06	2/18/00	0/00/00	3/15/00
METALS, TOTAL (Method Exclusive) - Solids				
M7471_S HG				
(A-70-09-01) D8QMW Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	2/18/00	3/01/00	4/10/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) D8QMW-1-0H Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	2/18/00	3/01/00	4/10/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) D8QMW-1-0L Protocol: A QC Program: STANDARD TEST SET				

PSL20300
Page 1

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 2/18/00
Time: 13:27:13
User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 100H AREA FULL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B99-042
AMOUNT REC"D: 3X250G
STORAGE LOC: S11E
LOT COMMENTS: QC is billable
MATRIX: SOLID
SAMPLE ID: B0X4T9
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:

QUOTE/SAR #: 34666
LAB ID: F-0B180193-001-S
WORK ORDER: D8QMW MS
RECEIVING DATE: 2/17/00
SAMPLING DATE: 2/16/00
ANALYTICAL DUE DATE: 3/07/00N
REPORT DUE DATE: 3/10/00
PRIORITY: 18
SAMPLING TIME: 10:40
RECEIVING TIME: 11:50
SDG# : W03087

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S AS,CR,PB (A-46-QM-01) D8QMW Protocol: A QC Program: STANDARD TEST SET	06	2/18/00	0/00/00	8/14/00
Mercury (7471A, Cold Vapor) - Solids METALS, TOTAL (Method Exclusive) - Solids M7471_S HG (A-70-09-01) D8QMW Protocol: A QC Program: STANDARD TEST SET	06	2/18/00	0/00/00	3/15/00
PCBs (8082) SONICATION w/ACID STRIP (PCB) STL: HANFORD PCB GC:LIST-1(7) (A-71-QH-01) D8QMW-1-0G Protocol: A QC Program: STANDARD TEST SET	06	2/18/00	3/01/00	4/10/00
Base/Neutrals and Acids (8270C) SONICATION - Low Level STL: SW-846 8270C (A-13-QL-01) D8QMW-1-0K Protocol: A QC Program: STANDARD TEST SET	06	2/18/00	3/01/00	4/10/00

PSL20300 QUANTERRA INCORPORATED Run Date: 2/18/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:27:13
Quanterra - St. Louis User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 34666
PROJECT MANAGER: MARTI WARD LAB ID: F-0B180193-002
PROJECT #: 100H AREA FULL WORK ORDER: D8QNA
REPORT TO: Joan Kessner RECEIVING DATE: 2/17/00
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 2/16/00
SITE: B99-042 ANALYTICAL DUE DATE: 3/07/00N
AMOUNT REC"D: 3X250G REPORT DUE DATE: 3/10/00
STORAGE LOC: S11E PRIORITY: 18
LOT COMMENTS: QC is billable SAMPLING TIME: 11:15
MATRIX: SOLID RECEIVING TIME: 11:50
SAMPLE ID: B0X4T2
QC PACKAGE: Special Report - see checklist SDG# : W03087
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	2/18/00	0/00/00	8/14/00
METALS, TOTAL - Soils				
MT6010_S AS,CR,PB				
(A-46-QM-01) D8QNA Protocol: A QC Program: STANDARD TEST SET				
Mercury (7471A, Cold Vapor) - Solids	06	2/18/00	0/00/00	3/15/00
METALS, TOTAL (Method Exclusive) - Solids				
M7471_S HG				
(A-70-09-01) D8QNA Protocol: A QC Program: STANDARD TEST SET				
Moisture, Percent (160.3)	06	2/18/00	0/00/00	5/25/00
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) D8QNA-1-05 Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	2/18/00	3/01/00	4/10/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) D8QNA-1-06 Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	2/18/00	3/01/00	4/10/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) D8QNA-1-07 Protocol: A QC Program: STANDARD TEST SET				

PSL20300 QUANTERRA INCORPORATED Run Date: 2/18/00
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:27:13
Quanterra - St. Louis User Id.: SEITHELK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 34666
PROJECT MANAGER: MARTI WARD LAB ID: F-0B180193-003
PROJECT #: 100H AREA FULL WORK ORDER: D8QND
REPORT TO: Joan Kessner RECEIVING DATE: 2/17/00
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 2/16/00
SITE: B99-042 ANALYTICAL DUE DATE: 3/07/00N
AMOUNT REC"D: 3X250G REPORT DUE DATE: 3/10/00
STORAGE LOC: S11E PRIORITY: 18
LOT COMMENTS: QC is billable SAMPLING TIME: 12:55
MATRIX: SOLID RECEIVING TIME: 11:50
SAMPLE ID: B0VLW7
QC PACKAGE: Special Report - see checklist SDG# : W03087
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	2/18/00	0/00/00	8/14/00
METALS, TOTAL - Soils				
MT6010_S AS,CR,PB				
(A-46-QM-01) D8QND Protocol: A QC Program: STANDARD TEST SET				
Mercury (7471A, Cold Vapor) - Solids	06	2/18/00	0/00/00	3/15/00
METALS, TOTAL (Method Exclusive) - Solids				
M7471_S HG				
(A-70-09-01) D8QND Protocol: A QC Program: STANDARD TEST SET				
Moisture, Percent (160.3)	06	2/18/00	0/00/00	5/25/00
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) D8QND-1-05 Protocol: A QC Program: STANDARD TEST SET				
PCBs (8082)	06	2/18/00	3/01/00	4/10/00
SONICATION w/ACID STRIP (PCB)				
STL: HANFORD PCB GC:LIST-1(7)				
(A-71-QH-01) D8QND-1-06 Protocol: A QC Program: STANDARD TEST SET				
Base/Neutrals and Acids (8270C)	06	2/18/00	3/01/00	4/10/00
SONICATION - Low Level				
STL: SW-846 8270C				
(A-13-QL-01) D8QND-1-07 Protocol: A QC Program: STANDARD TEST SET				

Q-27038 Cur 020863 2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-008	Page 1 of 1

Collector: Stankovich/ Trice / Nielson/ Wintrode	Company Contact: Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L — Data Turnaround: 21 Days — Air Quality ☐
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H4	SAF No.: B99-042	
Ice Chest No.: ERC-99-071	Field Logbook No.: EL-1500-1 — COA: R607H42600	Method of Shipment: Hand Deliver	
Shipped To: Quanterra Incorporated	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage: SDG W03087 — Due 3-10 — SAMPLE ANALYSIS: JOB170228

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	See item (1) in Special Instructions	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 – Total Sr; Nickel-63	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions			
Preservation				Cool 4C	None	None	None	Cool 4C	Cool 4C	None			
Type of Container				aG	aG	aG	aG	aG	aG	P			
No. of Container(s)				1	1	1	1	1	1	1			
Volume				60mL	~~60mL~~ 250	~~60mL~~ 125	~~60mL~~ 250	~~120mL~~ 250	~~120mL~~ 250	1000mL			
					full 100%			full 100%	full 80%	2.18.00			
BOX4T9 D8NVL	Soil	2-16-00	1040	✓	✓	✓	✓	✓	✓	✓			A-1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Bernie Nielson / R Nielson (TQ)	2/16/00	Ref #2A	
Ref #2A	2.17.00/0800	Rikki Thoren / R. Thoren	2.17.00/0800
Rikki Thoren / R. Thoren	2.17.00/1150	K. Allenburg (CCC)	2-17-00/1150
K. Allenburg (CCC)	2-17-00	[illegible]	2.18.00 835

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originated in non RAD controlled area. <200dpm/g NO TA Required.

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

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

BHI-EE-011 (10/99)

Data is incomplete without Case Narrative

STL - St. Louis

Data is incomplete without Case Narrative

STL - St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-006	Page 1 of 1

Collector: Stankovich/ Trice / Nielson	Company Contact: Stankovich; Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H2	SAF No.: B99-042	Air Quality ☐
Ice Chest No.: ERC 99-071	Field Logbook No.: EL-1500-1; COA: R607H22600	Method of Shipment: Hand Deliver	
Shipped To: Quanterra Incorporated	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage:

SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 – Total Sr; Nickel-63	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions			
Preservation	Cool 4C	None	None	None	Cool 4C	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	P			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	~~60mL~~ 250 SN	~~60mL~~ 125	~~60mL~~ 250	~~120mL~~ 250	~~120mL~~ 250	1000mL			
		full 100%			full 100%	full 100%				

Sample No.	Matrix *	Sample Date	Sample Time									
B0X4T2 DBNWF	Soil	2-16-00	1115	X	X	X	X	X	X	X		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: Renee Nelson/R Nielson	2/16/00 1700	Received By: Ref #2A	
Relinquished By: Ref 2A	2.17.00/0900	Received By: Rikki Thorson	2.17.00/0900
Relinquished By: Rikki Thorson	2.17.00/1150	Received By: R Heidenburg	2-17-00 1150
Relinquished By: R Heidenburg	2-17-00 1600	Received By: [illegible]	2.18.00 835
Relinquished By:		Received By:	
Relinquished By:		Received By:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Chromium, Lead]; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non RAD Controlled area. <2000 PCi/g. NOTA Required

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

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

BHI-EE-011 (10/99)

Data is incomplete without Case Narrative

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-042-004	Page 1 of 1

Collector: Stankovich/ Trice / Nielson /	Company Contact: Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 100 H Area - Full Protocol	Sampling Location: 1607 H2	SAF No.: B99-042	
Ice Chest No.: EPC 99-071	Field Logbook No.: EL-1500-1	COA: R607H22600	Method of Shipment: Hand Deliver
Shipped To: Quanterra Incorporated	Offsite Property No.: NA	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

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	P				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	60mL	60mL	120mL	120mL	1000mL				
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions full 100%	Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 – Total Sr; Nickel-63	PCBs - 8082 full 100%	Semi-VOA - 8270A (TCL) full 100%	See item (2) in Special Instructions. KN 2-18-00				
Sample No.	Matrix *	Sample Date	Sample Time								
B0VLW7 D8NW9	Soil	2-16-00	1255	X	X	X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Ren Nielsen/R Nelson	Date/Time: 2/16/00 1700	Received By: Ref #2A	Date/Time:
Relinquished By: Ref 2A	Date/Time: 2-17-00/0800	Received By: R. Thorson	Date/Time: 2-17-00/0800
Relinquished By: R. Thorson	Date/Time: 2-17-00/1150	Received By: R. Schlenley	Date/Time: 2-17-00 1150
Relinquished By: R. Schlenley	Date/Time: 2-17-00 1600	Received By: [illegible]	Date/Time: 2-18-00 835
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Sample originates in non RAD controlled area. <2000 pCi/g No TA Required

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

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

BHI-EE-011 (10/99)

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2/17/00 1150 SG#: W03087

Work Order Number: J0B170228 SAF #: B99-042

Shipping Container ID: ERC99-071 Chain of Custody # B99-042-008 B99-042-004, B99-042-006

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°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 21
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: L. Hettenberg Date: 2-17-00

Telephoned To: _____ On _____ By _____

Data is incomplete without Case Narrative

Quanterra Environmental Services

020863

Login No.: F0B180193
WO 3087

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hanford
Date: 2.18.00 Time: 835
Project No: 34666
Initiated by: [illegible]
Shipper/No: Airborne
RFA/COC Numbers: 899, 042, 004, 008, 006

Condition/Variance (Check all that apply):

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

☑ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: _____

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Received in St. Louis are items marked 100% full on C-O-C. SN 2.18.00

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: 2.18.00

Project Management Review: [illegible] Date: 2.18.00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 12/12/98

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T9

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-001 **Work Order #...:** D8QMW10J **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 03/01/00
Prep Batch #...: 0056215
Dilution Factor: 1
% Moisture.....: 6.5 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Phenol	ND	350	ug/kg	48
bis(2-Chloroethyl)-ether	ND	350	ug/kg	32
2-Chlorophenol	ND	350	ug/kg	42
1,3-Dichlorobenzene	ND	350	ug/kg	35
1,4-Dichlorobenzene	ND	350	ug/kg	32
1,2-Dichlorobenzene	ND	350	ug/kg	37
2-Methylphenol	ND	350	ug/kg	43
2,2'-oxybis(1-Chloropropane)	ND	350	ug/kg	36
4-Methylphenol	ND	350	ug/kg	54
N-Nitrosodi-n-propyl-amine	ND	350	ug/kg	40
Hexachloroethane	ND	350	ug/kg	31
Nitrobenzene	ND	350	ug/kg	32
Isophorone	ND	350	ug/kg	29
2-Nitrophenol	ND	350	ug/kg	42
2,4-Dimethylphenol	ND	350	ug/kg	42
bis(2-Chloroethoxy) methane	ND	350	ug/kg	26
2,4-Dichlorophenol	ND	350	ug/kg	64
1,2,4-Trichlorobenzene	ND	350	ug/kg	25
Naphthalene	ND	350	ug/kg	23
4-Chloroaniline	ND	350	ug/kg	58
Hexachlorobutadiene	ND	350	ug/kg	25
4-Chloro-3-methylphenol	ND	350	ug/kg	81
2-Methylnaphthalene	ND	350	ug/kg	32
Hexachlorocyclopenta-diene	ND	1700	ug/kg	27
2,4,6-Trichlorophenol	ND	350	ug/kg	59
2,4,5-Trichlorophenol	ND	350	ug/kg	92
2-Chloronaphthalene	ND	350	ug/kg	20
2-Nitroaniline	ND	1700	ug/kg	60
Dimethyl phthalate	ND	350	ug/kg	45
Acenaphthylene	ND	350	ug/kg	28
2,6-Dinitrotoluene	ND	350	ug/kg	63
3-Nitroaniline	ND	1700	ug/kg	39
Acenaphthene	**38 J**	**350**	**ug/kg**	**23**
2,4-Dinitrophenol	ND	1700	ug/kg	57

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T9

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-001 Work Order #...: D8QMW10J Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4-Nitrophenol	ND	1700	ug/kg	84
Dibenzofuran	ND	350	ug/kg	30
2,4-Dinitrotoluene	ND	350	ug/kg	80
Diethyl phthalate	ND	350	ug/kg	59
Fluorene	ND	350	ug/kg	34
4-Chlorophenyl phenyl ether	ND	350	ug/kg	34
4-Nitroaniline	ND	1700	ug/kg	56
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
N-Nitrosodiphenylamine	ND	350	ug/kg	32
4-Bromophenyl phenyl ether	ND	350	ug/kg	26
Hexachlorobenzene	ND	350	ug/kg	25
Pentachlorophenol	ND	1700	ug/kg	70
Phenanthrene	**290 J**	**350**	**ug/kg**	**16**
Anthracene	**64 J**	**350**	**ug/kg**	**23**
Carbazole	ND	350	ug/kg	99
Di-n-butyl phthalate	ND	350	ug/kg	26
Fluoranthene	**610**	**350**	**ug/kg**	**27**
Pyrene	**320 J**	**350**	**ug/kg**	**54**
Butyl benzyl phthalate	ND	350	ug/kg	17
Benzo(a)anthracene	**260 J**	**350**	**ug/kg**	**14**
3,3'-Dichlorobenzidine	ND	1700	ug/kg	30
Chrysene	**310 J**	**350**	**ug/kg**	**16**
bis(2-Ethylhexyl) phthalate	ND	350	ug/kg	39
Di-n-octyl phthalate	ND	350	ug/kg	29
Benzo(b)fluoranthene	**200 J**	**350**	**ug/kg**	**18**
Benzo(k)fluoranthene	**190 J**	**350**	**ug/kg**	**36**
Benzo(a)pyrene	**220 J**	**350**	**ug/kg**	**16**
Indeno(1,2,3-cd)pyrene	**120 J**	**350**	**ug/kg**	**88**
Benzo(ghi)perylene	ND	350	ug/kg	150
Dibenzo(a,h)anthracene	**47 J**	**350**	**ug/kg**	**36**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	44	(22 - 96)
Phenol-d5	48	(23 - 108)
Nitrobenzene-d5	46	(16 - 104)
2-Fluorobiphenyl	43	(20 - 99)
2,4,6-Tribromophenol	43	(22 - 111)
Terphenyl-d14	27	(9.0- 117)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

B0X4T9

GC/MS Semivolatiles

Lot-Sample #: F0B180193-001 **Work Order #:** D8QMW10J **Matrix:** SOLID

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Unknown cycloalkane		1100	M		ug/kg
Unknown aldol condensate		8800	M		ug/kg
Unknown		850	M		ug/kg

NOTE(S):

M: Result was measured against nearest internal standard assuming a response factor of 1.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T2

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-002 **Work Order #...:** D8QNA107 **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 03/01/00
Prep Batch #...: 0056215
Dilution Factor: 1
% Moisture.....: 4.0 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Phenol	ND	340	ug/kg	47
bis(2-Chloroethyl)-ether	ND	340	ug/kg	31
2-Chlorophenol	ND	340	ug/kg	41
1,3-Dichlorobenzene	ND	340	ug/kg	34
1,4-Dichlorobenzene	ND	340	ug/kg	31
1,2-Dichlorobenzene	ND	340	ug/kg	36
2-Methylphenol	ND	340	ug/kg	42
2,2'-oxybis(1-Chloropropane)	ND	340	ug/kg	35
4-Methylphenol	ND	340	ug/kg	53
N-Nitrosodi-n-propyl-amine	ND	340	ug/kg	39
Hexachloroethane	ND	340	ug/kg	30
Nitrobenzene	ND	340	ug/kg	31
Isophorone	ND	340	ug/kg	28
2-Nitrophenol	ND	340	ug/kg	41
2,4-Dimethylphenol	ND	340	ug/kg	41
bis(2-Chloroethoxy) methane	ND	340	ug/kg	25
2,4-Dichlorophenol	ND	340	ug/kg	62
1,2,4-Trichlorobenzene	ND	340	ug/kg	24
Naphthalene	ND	340	ug/kg	23
4-Chloroaniline	ND	340	ug/kg	56
Hexachlorobutadiene	ND	340	ug/kg	24
4-Chloro-3-methylphenol	ND	340	ug/kg	78
2-Methylnaphthalene	ND	340	ug/kg	31
Hexachlorocyclopenta-diene	ND	1700	ug/kg	26
2,4,6-Trichlorophenol	ND	340	ug/kg	58
2,4,5-Trichlorophenol	ND	340	ug/kg	90
2-Chloronaphthalene	ND	340	ug/kg	20
2-Nitroaniline	ND	1700	ug/kg	58
Dimethyl phthalate	ND	340	ug/kg	44
Acenaphthylene	ND	340	ug/kg	28
2,6-Dinitrotoluene	ND	340	ug/kg	62
3-Nitroaniline	ND	1700	ug/kg	38
Acenaphthene	ND	340	ug/kg	23
2,4-Dinitrophenol	ND	1700	ug/kg	56

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BECHTEL HANFORD, INC.

Client Sample ID: B0X4T2

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-002 Work Order #...: D8QNA107 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4-Nitrophenol	ND	1700	ug/kg	82
Dibenzofuran	ND	340	ug/kg	29
2,4-Dinitrotoluene	ND	340	ug/kg	77
Diethyl phthalate	ND	340	ug/kg	58
Fluorene	ND	340	ug/kg	33
4-Chlorophenyl phenyl ether	ND	340	ug/kg	33
4-Nitroaniline	ND	1700	ug/kg	55
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	120
N-Nitrosodiphenylamine	ND	340	ug/kg	31
4-Bromophenyl phenyl ether	ND	340	ug/kg	25
Hexachlorobenzene	ND	340	ug/kg	25
Pentachlorophenol	ND	1700	ug/kg	68
Phenanthrene	ND	340	ug/kg	15
Anthracene	ND	340	ug/kg	22
Carbazole	ND	340	ug/kg	96
Di-n-butyl phthalate	**35 J**	**340**	**ug/kg**	**26**
Fluoranthene	ND	340	ug/kg	26
Pyrene	ND	340	ug/kg	53
Butyl benzyl phthalate	ND	340	ug/kg	17
Benzo(a)anthracene	ND	340	ug/kg	14
3,3'-Dichlorobenzidine	ND	1700	ug/kg	30
Chrysene	ND	340	ug/kg	15
bis(2-Ethylhexyl) phthalate	ND	340	ug/kg	38
Di-n-octyl phthalate	ND	340	ug/kg	29
Benzo(b)fluoranthene	ND	340	ug/kg	18
Benzo(k)fluoranthene	ND	340	ug/kg	35
Benzo(a)pyrene	ND	340	ug/kg	16
Indeno(1,2,3-cd)pyrene	ND	340	ug/kg	86
Benzo(ghi)perylene	ND	340	ug/kg	150
Dibenzo(a,h)anthracene	ND	340	ug/kg	35

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	37	(22 - 96)
Phenol-d5	41	(23 - 108)
Nitrobenzene-d5	38	(16 - 104)
2-Fluorobiphenyl	33	(20 - 99)
2,4,6-Tribromophenol	33	(22 - 111)
Terphenyl-d14	27	(9.0- 117)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

B0X4T2

GC/MS Semivolatiles

Lot-Sample #: F0B180193-002 **Work Order #:** D8QNA107 **Matrix:** SOLID

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Unknown cycloalkane		920	M		ug/kg
Unknown aldol condensate		9500	M		ug/kg
Unknown		700	M		ug/kg

NOTE(S):

M: Result was measured against nearest internal standard assuming a response factor of 1.

BECHTEL HANFORD, INC.

Client Sample ID: B0VLW7

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-003 **Work Order #...:** D8QND107 **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 03/08/00
Prep Batch #...: 0056215
Dilution Factor: 1
% Moisture.....: 5.0 **Method.....:** SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Phenol	ND	350	ug/kg	48
bis(2-Chloroethyl)-ether	ND	350	ug/kg	31
2-Chlorophenol	ND	350	ug/kg	41
1,3-Dichlorobenzene	ND	350	ug/kg	35
1,4-Dichlorobenzene	ND	350	ug/kg	31
1,2-Dichlorobenzene	ND	350	ug/kg	37
2-Methylphenol	ND	350	ug/kg	42
2,2'-oxybis(1-Chloropropane)	ND	350	ug/kg	35
4-Methylphenol	ND	350	ug/kg	53
N-Nitrosodi-n-propyl-amine	ND	350	ug/kg	39
Hexachloroethane	ND	350	ug/kg	30
Nitrobenzene	ND	350	ug/kg	31
Isophorone	ND	350	ug/kg	29
2-Nitrophenol	ND	350	ug/kg	41
2,4-Dimethylphenol	ND	350	ug/kg	41
bis(2-Chloroethoxy) methane	ND	350	ug/kg	25
2,4-Dichlorophenol	ND	350	ug/kg	63
1,2,4-Trichlorobenzene	ND	350	ug/kg	25
Naphthalene	ND	350	ug/kg	23
4-Chloroaniline	ND	350	ug/kg	57
Hexachlorobutadiene	ND	350	ug/kg	24
4-Chloro-3-methylphenol	ND	350	ug/kg	79
2-Methylnaphthalene	ND	350	ug/kg	32
Hexachlorocyclopenta-diene	ND	1700	ug/kg	26
2,4,6-Trichlorophenol	ND	350	ug/kg	58
2,4,5-Trichlorophenol	ND	350	ug/kg	91
2-Chloronaphthalene	ND	350	ug/kg	20
2-Nitroaniline	ND	1700	ug/kg	59
Dimethyl phthalate	ND	350	ug/kg	44
Acenaphthylene	ND	350	ug/kg	28
2,6-Dinitrotoluene	ND	350	ug/kg	62
3-Nitroaniline	ND	1700	ug/kg	39
Acenaphthene	ND	350	ug/kg	23
2,4-Dinitrophenol	ND	1700	ug/kg	56

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BECHTEL HANFORD, INC.

Client Sample ID: B0VLW7

GC/MS Semivolatiles

Lot-Sample #...: F0B180193-003 Work Order #...: D8QND107 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4-Nitrophenol	ND	1700	ug/kg	83
Dibenzofuran	ND	350	ug/kg	29
2,4-Dinitrotoluene	ND	350	ug/kg	78
Diethyl phthalate	ND	350	ug/kg	58
Fluorene	ND	350	ug/kg	33
4-Chlorophenyl phenyl ether	ND	350	ug/kg	33
4-Nitroaniline	ND	1700	ug/kg	55
4,6-Dinitro-2-methylphenol	ND	1700	ug/kg	130
N-Nitrosodiphenylamine	ND	350	ug/kg	32
4-Bromophenyl phenyl ether	ND	350	ug/kg	26
Hexachlorobenzene	ND	350	ug/kg	25
Pentachlorophenol	ND	1700	ug/kg	68
Phenanthrene	ND	350	ug/kg	16
Anthracene	ND	350	ug/kg	22
Carbazole	ND	350	ug/kg	98
Di-n-butyl phthalate	ND	350	ug/kg	26
Fluoranthene	ND	350	ug/kg	27
Pyrene	ND	350	ug/kg	54
Butyl benzyl phthalate	ND	350	ug/kg	17
Benzo(a)anthracene	ND	350	ug/kg	14
3,3'-Dichlorobenzidine	ND	1700	ug/kg	30
Chrysene	ND	350	ug/kg	16
bis(2-Ethylhexyl) phthalate	ND	350	ug/kg	38
Di-n-octyl phthalate	ND	350	ug/kg	29
Benzo(b)fluoranthene	ND	350	ug/kg	18
Benzo(k)fluoranthene	ND	350	ug/kg	35
Benzo(a)pyrene	ND	350	ug/kg	16
Indeno(1,2,3-cd)pyrene	ND	350	ug/kg	86
Benzo(ghi)perylene	ND	350	ug/kg	150
Dibenzo(a,h)anthracene	ND	350	ug/kg	35

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	72	(22 - 96)
Phenol-d5	78	(23 - 108)
Nitrobenzene-d5	78	(16 - 104)
2-Fluorobiphenyl	73	(20 - 99)
2,4,6-Tribromophenol	80	(22 - 111)
Terphenyl-d14	60	(9.0- 117)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

B0VLW7

GC/MS Semivolatiles

Lot-Sample #: F0B180193-003 **Work Order #:** D8QND107 **Matrix:** SOLID

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Unknown cycloalkane		670	M		ug/kg
Unknown aldol condensate		8200	M		ug/kg

NOTE(S):

M: Result was measured against nearest internal standard assuming a response factor of 1.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T9

GC Semivolatiles

Lot-Sample #...: F0B180193-001 **Work Order #...:** D8QMW10F **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 02/29/00
Prep Batch #...: 0056344
Dilution Factor: 1
% Moisture.....: 6.5 **Method.....:** SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	35	ug/kg	32
Aroclor 1221	ND	35	ug/kg	32
Aroclor 1232	ND	35	ug/kg	32
Aroclor 1242	ND	35	ug/kg	32
Aroclor 1248	ND	35	ug/kg	32
Aroclor 1254	ND	35	ug/kg	33
Aroclor 1260	ND	35	ug/kg	33

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	95	(15 - 168)
Decachlorobiphenyl	98	(10 - 207)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T2

GC Semivolatiles

Lot-Sample #...: F0B180193-002 **Work Order #...:** D8QNA106 **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 02/29/00
Prep Batch #...: 0056344
Dilution Factor: 1
% Moisture.....: 4.0 **Method.....:** SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	34	ug/kg	31
Aroclor 1221	ND	34	ug/kg	31
Aroclor 1232	ND	34	ug/kg	31
Aroclor 1242	ND	34	ug/kg	31
Aroclor 1248	ND	34	ug/kg	31
Aroclor 1254	ND	34	ug/kg	32
Aroclor 1260	ND	34	ug/kg	32

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	100	(15 - 168)
Decachlorobiphenyl	98	(10 - 207)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B0VLW7

GC Semivolatiles

Lot-Sample #...: F0B180193-003 **Work Order #...:** D8QND106 **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
Prep Date.....: 02/25/00 **Analysis Date..:** 02/29/00
Prep Batch #...: 0056344
Dilution Factor: 1
% Moisture.....: 5.0 **Method.....:** SW846 8082

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Aroclor 1016	ND	35	ug/kg	32
Aroclor 1221	ND	35	ug/kg	32
Aroclor 1232	ND	35	ug/kg	32
Aroclor 1242	ND	35	ug/kg	32
Aroclor 1248	ND	35	ug/kg	32
Aroclor 1254	ND	35	ug/kg	33
Aroclor 1260	ND	35	ug/kg	33

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	99	(15 - 168)
Decachlorobiphenyl	92	(10 - 207)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T9

TOTAL Metals

Lot-Sample #...: F0B180193-001 Matrix.....: SOLID
Date Sampled...: 02/16/00 Date Received..: 02/17/00
% Moisture.....: 6.5

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0055264						
Mercury	0.012 B	0.036	mg/kg	SW846 7471A	02/24-02/25/00	D8QMW101
		Dilution Factor: 1		MDL.....: 0.0075		
Prep Batch #...: 0063148						
Arsenic	4.3	1.1	mg/kg	SW846 6010B	03/03-03/04/00	D8QMW104
		Dilution Factor: 1		MDL.....: 0.21		
Chromium	11.7	0.53	mg/kg	SW846 6010B	03/03-03/04/00	D8QMW10A
		Dilution Factor: 1		MDL.....: 0.096		
Lead	15.3	0.32	mg/kg	SW846 6010B	03/03-03/04/00	D8QMW107
		Dilution Factor: 1		MDL.....: 0.16		

NOTE(S):

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4T2

TOTAL Metals

Lot-Sample #...: F0B180193-002 **Matrix.....:** SOLID
Date Sampled...: 02/16/00 **Date Received..:** 02/17/00
% Moisture.....: 4.0

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0055264						
Mercury	0.29	0.035	mg/kg	SW846 7471A	02/24-02/25/00	D8QNA101
		Dilution Factor: 1		MDL.....: 0.0073		
Prep Batch #...: 0063148						
Arsenic	7.1	1.0	mg/kg	SW846 6010B	03/03-03/04/00	D8QNA102
		Dilution Factor: 1		MDL.....: 0.21		
Chromium	26.6	0.52	mg/kg	SW846 6010B	03/03-03/04/00	D8QNA104
		Dilution Factor: 1		MDL.....: 0.094		
Lead	45.5	0.31	mg/kg	SW846 6010B	03/03-03/04/00	D8QNA103
		Dilution Factor: 1		MDL.....: 0.16		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B0VLW7

TOTAL Metals

Lot-Sample #...: F0B180193-003 Matrix.....: SOLID
Date Sampled...: 02/16/00 Date Received..: 02/17/00
% Moisture.....: 5.0

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0055264						
Mercury	0.011 B	0.035	mg/kg	SW846 7471A	02/24-02/25/00	D8QND101
		Dilution Factor: 1		MDL.....: 0.0074		
Prep Batch #...: 0063148						
Arsenic	11.7	1.1	mg/kg	SW846 6010B	03/03-03/04/00	D8QND102
		Dilution Factor: 1		MDL.....: 0.21		
Chromium	11.8	0.53	mg/kg	SW846 6010B	03/03-03/04/00	D8QND104
		Dilution Factor: 1		MDL.....: 0.095		
Lead	37.9	0.32	mg/kg	SW846 6010B	03/03-03/04/00	D8QND103
		Dilution Factor: 1		MDL.....: 0.16		

NOTE(S):

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.