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Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L821
SDG/SAF# : H0497/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 08-20-99

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Data
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REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

1. This narrative covers the analyses of 7 soil samples.

2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

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11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at the following concentration:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0W646	Antimony	200	99.0

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

mld/m08-821r

002

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L821

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W646	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.3	MG/KG	0.26	1.0
		Barium, Total	92.6	MG/KG	0.02	1.0
		Beryllium, Total	1.2	MG/KG	0.008	1.0
		Cadmium, Total	0.09	MG/KG	0.02	1.0
		Chromium, Total	6.4	MG/KG	0.06	1.0
		Copper, Total	12.8	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.1	1.0
		Lead, Total	4.2	MG/KG	0.17	1.0
		Antimony, Total	0.22	MG/KG	0.20	1.0
		Selenium, Total	0.29 u	MG/KG	0.29	1.0
		Thallium, Total	0.74	MG/KG	0.42	1.0
		Vanadium, Total	48.8	MG/KG	0.05	1.0
		Zinc, Total	45.4	MG/KG	0.06	1.0
-002	B0W647	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	1.9	MG/KG	0.36	1.0
		Barium, Total	83.6	MG/KG	0.03	1.0
		Beryllium, Total	0.41	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	6.4	MG/KG	0.09	1.0
		Copper, Total	12.6	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.13	1.0
		Lead, Total	3.8	MG/KG	0.23	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.41	MG/KG	0.40	1.0
		Thallium, Total	0.62	MG/KG	0.57	1.0
		Vanadium, Total	49.0	MG/KG	0.06	1.0
		Zinc, Total	44.4	MG/KG	0.09	1.0

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INORGANICS DATA SUMMARY REPORT 11/09/99

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SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W649	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.2	MG/KG	0.30	1.0
		Barium, Total	57.2	MG/KG	0.03	1.0
		Beryllium, Total	0.34	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	3.6	MG/KG	0.07	1.0
		Copper, Total	14.5	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.4	MG/KG	0.11	1.0
		Lead, Total	3.4	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.65	MG/KG	0.49	1.0
		Vanadium, Total	44.4	MG/KG	0.06	1.0
		Zinc, Total	37.1	MG/KG	0.07	1.0
-004	B0W650	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.7	MG/KG	0.29	1.0
		Barium, Total	50.9	MG/KG	0.03	1.0
		Beryllium, Total	0.36	MG/KG	0.009	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	3.3	MG/KG	0.07	1.0
		Copper, Total	15.2	MG/KG	0.10	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.3	MG/KG	0.10	1.0
		Lead, Total	3.8	MG/KG	0.18	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.32 u	MG/KG	0.32	1.0
		Thallium, Total	0.54	MG/KG	0.46	1.0
		Vanadium, Total	36.5	MG/KG	0.05	1.0
		Zinc, Total	35.3	MG/KG	0.07	1.0

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W651	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.2	MG/KG	0.23	1.0
		Barium, Total	40.3	MG/KG	0.02	1.0
		Beryllium, Total	0.30	MG/KG	0.007	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	3.0	MG/KG	0.06	1.0
		Copper, Total	13.6	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.2	MG/KG	0.08	1.0
		Lead, Total	2.9	MG/KG	0.15	1.0
		Antimony, Total	0.18 u	MG/KG	0.18	1.0
		Selenium, Total	0.29	MG/KG	0.26	1.0
		Thallium, Total	0.63	MG/KG	0.37	1.0
		Vanadium, Total	34.0	MG/KG	0.04	1.0
		Zinc, Total	32.5	MG/KG	0.06	1.0
-006	B0W652	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.29	1.0
		Barium, Total	41.6	MG/KG	0.03	1.0
		Beryllium, Total	0.30	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	2.2	MG/KG	0.07	1.0
		Copper, Total	14.4	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.0	MG/KG	0.10	1.0
		Lead, Total	2.8	MG/KG	0.18	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.46	MG/KG	0.32	1.0
		Thallium, Total	0.60	MG/KG	0.46	1.0
		Vanadium, Total	30.8	MG/KG	0.05	1.0
		Zinc, Total	32.0	MG/KG	0.07	1.0

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W658	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.3	MG/KG	0.28	1.0
		Barium, Total	37.8	MG/KG	0.03	1.0
		Beryllium, Total	0.25	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	6.3	MG/KG	0.07	1.0
		Copper, Total	11.8	MG/KG	0.10	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	14.1	MG/KG	0.10	1.0
		Lead, Total	2.5	MG/KG	0.18	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.31 u	MG/KG	0.31	1.0
		Thallium, Total	0.73	MG/KG	0.45	1.0
		Vanadium, Total	27.9	MG/KG	0.05	1.0
		Zinc, Total	24.7	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0591-MB1	Silver, Total	0.20	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.03 u	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.1	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.25	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.12	MG/KG	0.08	1.0
BLANK1	99C0253-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W646	Silver, Total	4.7	0.08u	4.8	97.9	1.0
		Arsenic, Total	190	2.3	192	97.7	1.0
		Barium, Total	264	92.6	192	89.3	1.0
		Beryllium, Total	5.9	1.2	4.8	97.9	1.0
		Cadmium, Total	4.8	0.09	4.8	98.1	1.0
		Chromium, Total	26.1	6.4	19.2	102.6	1.0
		Copper, Total	35.1	12.8	24.1	92.5	1.0
		Mercury, Total	0.18	0.02u	0.18	101.1	1.0
		Nickel, Total	55.9	8.1	48.1	99.4	1.0
		Lead, Total	51.9	4.2	48.1	99.2	1.0
		Antimony, Total	17.9	0.22	48.1	36.7	1.0
		Selenium, Total	184	0.29u	192	95.6	1.0
		Thallium, Total	190	0.74	192	98.5	1.0
		Vanadium, Total	95.6	48.8	48.1	97.3	1.0
		Zinc, Total	91.7	45.4	48.1	96.3	1.0

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INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W646	Silver, Total	0.08u	0.09u	NC	1.0
		Arsenic, Total	2.3	2.2	4.4	1.0
		Barium, Total	92.6	88.0	5.1	1.0
		Beryllium, Total	1.2	1.2	0.00	1.0
		Cadmium, Total	0.09	0.06	47.2	1.0
		Chromium, Total	6.4	6.7	4.6	1.0
		Copper, Total	12.8	13.1	2.3	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	8.1	9.4	14.9	1.0
		Lead, Total	4.2	4.4	4.7	1.0
		Antimony, Total	0.22	0.36	46.0	1.0
		Selenium, Total	0.29u	0.32u	NC	1.0
		Thallium, Total	0.74	0.74	0.28	1.0
		Vanadium, Total	48.8	48.6	0.41	1.0
		Zinc, Total	45.4	46.8	3.0	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0591-LC1	Silver, LCS	49.4	50.0	MG/KG	98.8
		Arsenic, LCS	969	1000	MG/KG	96.9
		Barium, LCS	492	500	MG/KG	98.4
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	123	125	MG/KG	98.5
		Nickel, LCS	194	200	MG/KG	96.9
		Lead, LCS	243	250	MG/KG	97.2
		Antimony, LCS	289	300	MG/KG	96.5
		Selenium, LCS	951	1000	MG/KG	95.1
		Thallium, LCS	1000	1000	MG/KG	100.4
		Vanadium, LCS	249	250	MG/KG	99.6
		Zinc, LCS	96.1	100	MG/KG	96.1
LCS1	99C0253-LC1	Mercury, LCS	0.96	1.0	MG/KG	95.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646						
SILVER, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
SILVER, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
SILVER, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
MERCURY, TOTAL	001	S	99C0253	08/18/99	08/26/99	08/27/99
MERCURY, TOTAL	001 REP	S	99C0253	08/18/99	08/26/99	08/27/99
MERCURY, TOTAL	001 MS	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
NICKEL, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
NICKEL, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
ANTIMONY, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
ANTIMONY, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
ANTIMONY, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
SELENIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
SELENIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
THALLIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
THALLIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
THALLIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
VANADIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
VANADIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
VANADIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
B0W647						
SILVER, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	002	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
B0W649						
SILVER, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
B0W650						
SILVER, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	004	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
B0W651						
SILVER, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	005	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
B0W652						
SILVER, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	006	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
B0W658						
SILVER, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	007	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
ANTIMONY, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
THALLIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
SILVER, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
ARSENIC LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
ARSENIC, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
BARIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
BARIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
BERYLLIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
CADMIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
CADMIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
CHROMIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
CHROMIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
COPPER LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
COPPER, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
MERCURY LABORATORY	LC1 BS	S	99C0253	N/A	08/26/99	08/27/99
MERCURY, TOTAL	MB1	S	99C0253	N/A	08/26/99	08/27/99
NICKEL LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
NICKEL, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
LEAD LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
LEAD, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
ANTIMONY LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
ANTIMONY, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
SELENIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
SELENIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
THALLIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
THALLIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
VANADIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
VANADIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
ZINC LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
ZINC, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99

ge VOA schnell (8) perform wet chem

RECRA LabNet Use Only
9908L821

ALL

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU-HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30DAY
Date Rec'd: 8/20/99 Date Due: 9/19/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	1g	1g						1g		1Ab		1g			
Volume	Liquid															
	Solid	250	500	w/BNA		w/BNA			500		250	w/metals	Ltr			
Preservatives									–		–					
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	~~Pest~~ PCB	Herb				INORG: Metal	CN						

RECRA LabNet Use Only

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	ORCB		ODRO	OGCSC		Met ①		IPH	ICR6	INORG ①	
001	BØW646			S	8/18/99	0924	✓	✓	✓		✓	✓		✓		✓	✓	✓	
2	647					0930	✓	✓	✓		✓	✓		✓		✓	✓	✓	
3	649					0946	✓	✓	✓		✓	✓		✓		✓	✓	✓	
4	650					1003	✓	✓	✓		✓	✓		✓		✓	✓	✓	still logged
5	651					1015	✓	✓	✓		✓	✓		✓		✓	✓	✓	8/21/99
6	652					1030	✓	✓	✓		✓	✓		✓		✓	✓	✓	sample
007	658					1046	✓	✓	✓		✓	✓		✓		✓	✓	✓	broken

COMPOSITE WASTE

001 → no bottle rec'd for metals or CR6 take aliquots from other jars.

upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Sag # B99-078
11/3/99 Sb + Tl added per client
Run Matrix QC
8/26/94 added OGCSC 1→7
OGCSC = ethanol + propanol

DATE/REVISIONS:
→ 1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
→ 3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. K 423579528576 @ 4.1°c
6. K 423579528565 @ 4.3°c

Relinquished by	Received by	Date	Time
FedEx	B Miller	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___ Airbill # X
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

Discrepancies Between Samples Lables and COC Record? Y or N
NOTES:

Page 1 of 1

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector R. Nielson/D. Bowers	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-4 <15' bgs 4.5'-5.5'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DJB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 423579528565
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

621

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	0 ~~0~~ RJN 8/19/99	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W646	Soil	8-18-99	0924		X	X	X	X	X		B0W565

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-18-99/1315	Ref 1B	8-18-99/1315
Ref# 1B	8/19/99 0900	R. Nielson	8/19/99 (0900)
R. Nielson/R. Nielson	8/19/99 (1330)	Fed Ex	
FedEx		B Miller	8/20/99 0930

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, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provided

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

019

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-57	Page 1 of 1

Collector: R. Nielson/D. Bowers	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-4 <15' bgs 7' - 8'		SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511		Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA 11 [illegible] 8-18-99	Offsite Property No.: A990221		Bill of Lading/Air Bill No.: 423579528565	
			COA: D20CW7 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None				
	Type of Container	aG	aG	aG	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1	1	1				
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.				

Sample No.	Matrix *	Sample Date	Sample Time										
B0W647	Soil	8-18-99	0930		X	X	X	X	X		B0W565		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers — Date/Time: Doug Bowers 8-18-99/1315	Received By: RCF 1B — Date/Time: 8-18-99/1315		
Relinquished By: RCF #1B — Date/Time: 8/19/99 0900	Received By: Renee Nielson / R. Nielson — Date/Time: 8/19/99 0900		
Relinquished By: Renee Nielson / R. Nielson — Date/Time: 8/19/99 1330	Received By: FedEx — Date/Time:		
Relinquished By: FedEx — Date/Time:	Received By: [signature] — Date/Time: 8/20/99		
LABORATORY SECTION	Received By	Title	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, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

*Note: if additional sample material is required for item (2) analysis use material from other sample material provided.

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

020

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector R. Nielson/D. Bowers	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-4 <15' bgs 9.5' - 10.5'	SAF No. B99-078	
Ice Chest No. ERC96-005	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA BZB 8-18-99	Offsite Property No. A990221	Bill of Lading/Air Bill No. 423579528565	
		COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W649	Soil	8-18-99	0946		X	X	X	X	X		BOWS	LS	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-18-99/1315	Received By Ref 1B	Date/Time 8-18-99/1315
Relinquished By Ref #1B	Date/Time 8/19/99 0900	Received By Renee Nielson/R Nielson	Date/Time 8/19/99 0900
Relinquished By Renee Nielson/R Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Milley	Date/Time 8/20/99 0930

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, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; 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	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

021

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-59	Page 1 of 1

Collector R. Nielson/D. Bowers	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-4 <15' bgs 12' - 13'	SAF No. B99-078	
Ice Chest No. ERC96-005	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA DB 8-18-99	Offsite Property No. A990221	Bill of Lading/Air Bill No. 423579528565	
		COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W650	Soil	8-18-99	1003		X	X	X	X	X		B0W5L5		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Ref 1B Date/Time 8-18-99/1315		
Relinquished By Ref # 1B Date/Time 8/19/99 0900	Received By Renee Nielson/R Nielson Date/Time 8/19/99 0900		
Relinquished By Renee Nielson/R Nielson Date/Time 8/19/99 1330	Received By FedEx Date/Time		
Relinquished By FedEx Date/Time	Received By B Miller Date/Time 8/20/99 0930		

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, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; 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	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

022

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector R. Nielson/D. Bowers	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-4 <15' bgs 14' - 15'	SAF No. B99-078	
Ice Chest No. SML-552	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221	Bill of Lading/Air Bill No. 423579528576	
		COA B20CW167C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B0W651	Soil	8-18-99	1015		X	X	X	X	X		BOW5L5	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-18-99/1315	Received By Ref 1B	Date/Time 8-18-99/1315
Relinquished By Ref #1B	Date/Time 8/19/99 0900	Received By Renee Nielson/R. Nielson	Date/Time 8/19/99 0900
Relinquished By Renee Nielson/R. Nielson	Date/Time 8/19/99 1330	Received By Fed Ex	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99

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, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); 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	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-61	Page 1 of 1

Collector R. Nielson/D. Bowers	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-4 >15' bgs 19.5' – 20.5'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DXB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 42357952 8576
			COA B20CW, 67/C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W652	Soil	8-18-99	1030					X	X	X	X	X	
													BOW5L

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-18-99/1315	Bob IB	8-18-99/1315
BEF #1B	8/19/99 0900	Renee Nielson/R. Nielson	8/19/99 0900
Renee Nielson/R. Nielson	8/19/99 1232	Fed Ex	
FedEx		B Miller	8/20/99

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, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); 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	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

024

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-62	Page 1 of 1

Collector R. Nielson/D. Bowers	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-4 >15' bgs 24' -25'		SAF No. B99-078		
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9902 21		Bill of Lading/Air Bill No. 4235795285 76		
			COA B20 CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix * / Sample Date / Sample Time										
B0W658	Soil / 8-18-99 / 1046					X	X	X	X	X	
											BOWSLS

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	Doug Bowers	8-18-99 / 1315
Received By	D. of 1B	8-18-99 / 1315
Relinquished By	Ref #1B	8/19/99 0900
Received By	Rene Nielson / R. Nielson	8/19/99 0900
Relinquished By	Rene Nielson / R. Nielson	8/19/99 1530
Received By	Fed Ex	
Relinquished By	FedEx	
Received By	B Mullen	8/20/99 0930

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, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); 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	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

025