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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LL4						
SILVER, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
SILVER, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
SILVER, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
BARIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
BARIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
BARIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
CALCIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
CALCIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
CALCIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
CADMIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
CADMIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
CADMIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
COBALT, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
COBALT, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
COBALT, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
CHROMIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
CHROMIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
CHROMIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
COPPER, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
COPPER, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
COPPER, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
IRON, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
IRON, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
IRON, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
POTASSIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
POTASSIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
POTASSIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
MAGNESIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
MAGNESIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00

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Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
MANGANESE, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
MANGANESE, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
MANGANESE, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
SODIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
SODIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
SODIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
NICKEL, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
NICKEL, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
NICKEL, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
ANTIMONY, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
ANTIMONY, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
ANTIMONY, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
VANADIUM, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
VANADIUM, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
VANADIUM, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
ZINC, TOTAL	001	W	99L1827	11/20/00	12/18/00	12/27/00
ZINC, TOTAL	001 REP	W	99L1827	11/20/00	12/18/00	12/27/00
ZINC, TOTAL	001 MS	W	99L1827	11/20/00	12/18/00	12/27/00
B10LL5						
SILVER, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
ALUMINUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
BARIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
CALCIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
CADMIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
COBALT, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
CHROMIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
COPPER, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
IRON, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
POTASSIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
MAGNESIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
MANGANESE, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
NICKEL, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
ANTIMONY, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
STRONTIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
VANADIUM, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00
ZINC, TOTAL	002	W	99L1827	11/20/00	12/18/00	12/27/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
SILVER, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
ALUMINUM LABORTORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
ALUMINUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
BARIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
BARIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
BERYLLIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
CALCIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
CALCIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
CADMIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
CADMIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
COBALT LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
COBALT, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
CHROMIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
CHROMIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
COPPER LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
COPPER, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
IRON LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
IRON, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
POTASSIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
POTASSIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
MAGNESIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
MANGANESE LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
MANGANESE, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
SODIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
SODIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
NICKEL LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
ANTIMONY LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
ANTIMONY, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
STRONTIUM LCS STANDA	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
STRONTIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
VANADIUM LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
VANADIUM, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00
ZINC LABORATORY	LC1 BS	W	99L1827	N/A	12/18/00	12/27/00
ZINC, TOTAL	MB1	W	99L1827	N/A	12/18/00	12/27/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD C01-008
RFW#: 0011L357
SDG/SAF#: H1147/C01-008

W.O.#: 10985-001-001-9999-00
Date Received: 11-22-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 water samples.

2. The 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. The cooler temperature has 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. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a.) The MB result for Zinc was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

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 16 pages.

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10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. 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.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, 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.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

gmb/m11-357

01-05-01
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0011L357

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050B __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-11/99

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.

RFW 21-21L-033/N-10/96

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INORGANICS DATA SUMMARY REPORT 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10LL4	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	53.5		UG/L	22.7	1.0
		Barium, Total	76.5		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	48000		UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	44.4		UG/L	0.60	1.0
		Copper, Total	0.90		UG/L	0.90	1.0
		Iron, Total	49.3		UG/L	21.8	1.0
		Potassium, Total	3430		UG/L	40.9	1.0
		Magnesium, Total	10800		UG/L	6.7	1.0
		Manganese, Total	2.6		UG/L	0.20	1.0
		Sodium, Total	10100		UG/L	4.1	1.0
		Nickel, Total	1.0		UG/L	0.90	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	216		UG/L	0.10	1.0
		Vanadium, Total	2.7		UG/L	0.80	1.0
		Zinc, Total	6.4		UG/L	0.40	1.0

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INORGANICS DATA SUMMARY REPORT 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LL5	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	60.0		UG/L	22.7	1.0
		Barium, Total	80.6		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	49600		UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	49.8		UG/L	0.60	1.0
		Copper, Total	1.6		UG/L	0.90	1.0
		Iron, Total	894		UG/L	21.8	1.0
		Potassium, Total	3560		UG/L	40.9	1.0
		Magnesium, Total	11200		UG/L	6.7	1.0
		Manganese, Total	3.1		UG/L	0.20	1.0
		Sodium, Total	10300		UG/L	4.1	1.0
		Nickel, Total	1.0		UG/L	0.90	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	223		UG/L	0.10	1.0
		Vanadium, Total	3.8		UG/L	0.80	1.0
		Zinc, Total	9.5		UG/L	0.40	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1827-MB1	Silver, Total	1.1 u	UG/L	1.1	1.0
		Aluminum, Total	34.8	UG/L	22.7	1.0
		Barium, Total	0.47	UG/L	0.20	1.0
		Beryllium, Total	0.10 u	UG/L	0.10	1.0
		Calcium, Total	19.2 u	UG/L	19.2	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Cobalt, Total	0.90 u	UG/L	0.90	1.0
		Chromium, Total	0.91	UG/L	0.60	1.0
		Copper, Total	0.90 u	UG/L	0.90	1.0
		Iron, Total	21.8 u	UG/L	21.8	1.0
		Potassium, Total	40.9	UG/L	40.9	1.0
		Magnesium, Total	14.5	UG/L	6.7	1.0
		Manganese, Total	0.20 u	UG/L	0.20	1.0
		Sodium, Total	44.2	UG/L	4.1	1.0
		Nickel, Total	0.90 u	UG/L	0.90	1.0
		Antimony, Total	2.3 u	UG/L	2.3	1.0
		Strontium, Total	0.17	UG/L	0.10	1.0
		Vanadium, Total	0.80 u	UG/L	0.80	1.0
		Zinc, Total	3.7	UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10LL4	Silver, Total	49.0	1.1 u	50.0	98.0	1.0
		Aluminum, Total	1980	53.5	2000	96.6	1.0
		Barium, Total	2010	76.5	2000	96.6	1.0
		Beryllium, Total	49.8	0.10u	50.0	99.6	1.0
		Calcium, Total	77200	48000	25000	116.7	1.0
		Cadmium, Total	51.1	0.30u	50.0	102.2	1.0
		Cobalt, Total	494	0.90u	500	98.8	1.0
		Chromium, Total	246	44.4	200	100.6	1.0
		Copper, Total	240	0.90	250	95.4	1.0
		Iron, Total	1010	49.3	1000	96.5	1.0
		Potassium, Total	29800	3430	25000	105.5	1.0
		Magnesium, Total	37400	10800	25000	106.5	1.0
		Manganese, Total	508	2.6	500	101.0	1.0
		Sodium, Total	34800	10100	25000	99.1	1.0
		Nickel, Total	484	1.0	500	96.6	1.0
		Antimony, Total	512	2.3 u	500	102.5	1.0
		Strontium, Total	1230	216	1000	101.9	1.0
		Vanadium, Total	498	2.7	500	99.1	1.0
		Zinc, Total	492	6.4	500	97.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10LL4	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	53.5	29.0	59.4	1.0
		Barium, Total	76.5	82.7	7.8	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	48000	51800	7.7	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.90u	0.90u	NC	1.0
		Chromium, Total	44.4	47.4	6.5	1.0
		Copper, Total	0.90	0.90u	~~NC~~ 200	1.0
		Iron, Total	49.3	34.8	34.5	1.0
		Potassium, Total	3430	3760	9.1	1.0
		Magnesium, Total	10800	11800	8.4	1.0
		Manganese, Total	2.6	2.5	3.9	1.0
		Sodium, Total	10100	10900	7.7	1.0
		Nickel, Total	1.0	0.90u	~~NC~~ 200	1.0
		Antimony, Total	2.3 u	2.3 u	NC	1.0
		Strontium, Total	216	234	8.2	1.0
		Vanadium, Total	2.7	3.3	20.0	1.0
		Zinc, Total	6.4	3.0	72.3	1.0

yjb 1/4/01

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/04/01

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1827-LC1	Silver, LCS	503	500	UG/L	100.5
		Aluminum, LCS	5160	5000	UG/L	103.1
		Barium, LCS	4900	5000	UG/L	98.0
		Beryllium, LCS	252	250	UG/L	100.6
		Calcium, LCS	24900	25000	UG/L	99.4
		Cadmium, LCS	253	250	UG/L	101.2
		Cobalt, LCS	2530	2500	UG/L	101.2
		Chromium, LCS	503	500	UG/L	100.6
		Copper, LCS	1230	1250	UG/L	98.2
		Iron, LCS	5060	5000	UG/L	101.3
		Potassium, LCS	25700	25000	UG/L	102.7
		Magnesium, LCS	25800	25000	UG/L	103.0
		Manganese, LCS	770	750	UG/L	102.6
		Sodium, LCS	24500	25000	UG/L	98.1
		Nickel, LCS	1990	2000	UG/L	99.6
		Antimony, LCS	3010	3000	UG/L	100.4
		Strontium, LCS	4940	5000	UG/L	98.7
		Vanadium, LCS	2530	2500	UG/L	101.4
		Zinc, LCS	1010	1000	UG/L	101.2

RECRA LabNet Use Only

00111357

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU-HANFORD SAF# C01-008

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 11-22-00 Date Due 12-22-00

Account #

		A	B
Refrigerator #			
#/Type Container	Liquid	1PC	1PC
	Solid		
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	—

ANALYSES REQUESTED →

ORGANIC				INORG		
VOA	BNA	Pest/PCB	Herb	Metal	CN	Fluoride

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Met (1)		ICI (1)
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	001	B10LL4			W	11/20/00	1239	1		
	002	1 5			1	1	1	1		1

Special Instructions: SAF C01-008

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Mg

2. Mn, Ni, Na, Sb, Sr, V, Zn

IC (1) 3. Br, Cl, F1, NO2, NO3, PO4, SO4

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped / or Hand Delivered

Airbill # Bob

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'd Y or N

Cooler Temp. 4.3 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

8214 8982 9990

Relinquished by	Received by	Date	Time
FedEx	[illegible]	11/22/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL! REWRITTEN		

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Chem SDG H1147

C.O.C. # C01-008-154

Page 1 of 1

Collector D. E. PARCHEN	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WM-SHWS-1139	Ice Chest No. SMC 160 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795407 50
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LL4 (F)		W	11-20-00	1239	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LL5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LL5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LL5		W			1x20-mL P	Activity Scan	None
B10LL5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LL5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LL5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN		NOV 20 2000 1330	Fed Ex			11-20-00
Fed Ex			11-21-00 9:30	JR Corso			11-21-00 9:30
JR Corso			11-21-00 16:10	Fed Ex			11-21-00
Fed Ex			11/22/00 0930				11/22/00 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LL5						
BROMIDE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
BROMIDE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
BROMIDE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
CHLORIDE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
CHLORIDE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
CHLORIDE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
FLUORIDE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
FLUORIDE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
FLUORIDE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRITE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRITE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRITE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRATE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRATE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
NITRATE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
PHOSPHATE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
PHOSPHATE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
PHOSPHATE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00
SULFATE BY IC	002	W	00LIC076	11/20/00	11/29/00	11/29/00
SULFATE BY IC	002 REP	W	00LIC076	11/20/00	11/29/00	11/29/00
SULFATE BY IC	002 MS	W	00LIC076	11/20/00	11/29/00	11/29/00

LAB QC:

BROMIDE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
BROMIDE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
CHLORIDE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
CHLORIDE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
FLUORIDE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
FLUORIDE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
NITRITE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
NITRITE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
NITRATE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
NITRATE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
PHOSPHATE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1147

DATE RECEIVED: 11/22/00 RFW LOT # :0011L357

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00
SULFATE BY IC	MB1	W	00LIC076	N/A	11/29/00	11/29/00
SULFATE BY IC	MB1 BS	W	00LIC076	N/A	11/29/00	11/29/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C01-008 H1147
RFW# : 0011L357

W.O. # : 10985-001-001-9999-00
Date Received: 11-22-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with the method checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite and Phosphate.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, 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.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-05-01
Date

njp\i11-357

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 11 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
✓Bromide ✓Chloride ✓Fluoride	✓ 300.0	___ 9056	
✓Nitrate ✓Nitrite ✓Phosphate	✓ 300.0	___ 9056	
✓Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.4		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		

Other: **Method:**

Recra LabNet Philadelphia
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
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/06/00

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LL5	Bromide by IC	0.50 u	MG/L	0.50	2.0
		Chloride by IC	19.8	MG/L	0.50	2.0
		Fluoride by IC	1.0 u	MG/L	1.0	2.0
		Nitrite by IC	0.50 u	MG/L	0.50	2.0
		Nitrate by IC	24	MG/L	2.5	10
		Phosphate by IC	0.50 u	MG/L	0.50	2.0
		Sulfate by IC	67.5	MG/L	2.5	10.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/06/00

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LIC076-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/06/00

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B10LL5	Bromide by IC	24.2	0.31	25.0	95.6	5.0
		Chloride by IC	44.1	19.8	25.0	97.4	5.0
		Fluoride by IC	54.0	0.12	50.0	107.7	5.0
		Nitrite by IC	26	0.50u	25	105.5	5.0
		Nitrate by IC	120	24	100	98.4	20
		Phosphate by IC	24.5	0.50u	25.0	98.2	5.0
		Sulfate by IC	171	67.5	100	103.2	20.0
BLANK10	00LIC076-MB1	Bromide by IC	4.9	0.25u	5.0	98.1	1.0
		Chloride by IC	5.0	0.25u	5.0	99.9	1.0
		Fluoride by IC	10.8	0.50u	10.0	108.0	1.0
		Nitrite by IC	5.0	0.25u	5.0	100.3	1.0
		Nitrate by IC	4.9	0.25u	5.0	98.5	1.0
		Phosphate by IC	5.0	0.25u	5.0	99.5	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.9	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/06/00

CLIENT: TNUHANFORD C01-008 H1147 RECRA LOT #: 0011L357

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B10LL5	Bromide by IC	0.50u	0.50u	NC	2.0
		Chloride by IC	19.8	19.5	1.5	2.0
		Fluoride by IC	1.0 u	1.0 u	NC	2.0
		Nitrite by IC	0.50u	0.50u	NC	2.0
		Nitrate by IC	24	24	0.38	10
		Phosphate by IC	0.50u	0.50u	NC	2.0
		Sulfate by IC	67.5	67.2	0.41	10.0

RECRA LabNet Use Only

00111357

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU-HANFORD SAF# C01-008

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 11-22-00 Date Due 12-22-00

Account #

		A	B	C
Refrigerator #				
#/Type Container	Liquid	1PL	1PL	
	Solid			
Volume	Liquid	500	500	
	Solid			
Preservatives		HNO3	—	
ANALYSES REQUESTED	ORGANIC: VOA			
	ORGANIC: BNA			
	ORGANIC: Pest/PCB			
	ORGANIC: Herb			
	INORG: Metal	Met (1)		
	INORG: CN			
	INORG: Anions		IC (1)	

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	Met (1)	IC (1)
001	B10LL4			W	11/20/00	1239	1	
002	1 5			1	1	1	1	1

Special Instructions: Saf C01-008

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Mg

2. Mn, Ni, Na, Sb, Sr, V, Zn

IC (1) 3. Br, Cl, Fl, NO2, NO3, PO4, SO4

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped / or Hand Delivered

Airbill # Self Deliver

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

Cooler Temp. 4.3 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 8214 8982 9990

Relinquished by	Received by	Date	Time
FedEx	V. Klemz	11/22/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Chem SDG H1147

C.O.C. # C01-008-154

Page 1 of 1

Collector D. E. PARCHEN	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WM-SHWS-1139	Ice Chest No. SMC 160 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795407 50
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B10LL4 (F)		W	11-20-00	1239	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LL5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LL5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LL5		W			1x20-mL P	Activity Scan	None
B10LL5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LL5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LL5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. E. PARCHEN			NOV 20 2000 1330	Fed Ex			11-20-00
Fed Ex			11-21-00 9:30	J R Corso			11-21-00 9:30
J R Corso			11-21-00 16:10	Fed Ex			11-21-00
Fed Ex			11/22/00 0930				11/22/00 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1147 was composed of one water sample designated under SAF No. C01-008 with a Project Designation of: 100HR3 IAM (1 & 2) GW Monitoring, November 2000.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

1/15/01

Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

SAMPLE SUMMARY

SDG 7571
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1147

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10LL5	Hanford Site	WATER		R011153-01	C01-008	C01-008-154	11/20/00 12:39
Method Blank		WATER		R011153-03	C01-008		
Lab Control Sample		WATER		R011153-02	C01-008		
Duplicate (R011153-01)	Hanford Site	WATER		R011153-04	C01-008		11/20/00 12:39
Spike (R011153-01)	Hanford Site	WATER		R011153-05	C01-008		11/20/00 12:39

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

QC SUMMARY

SDG 7571
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1147

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7571	C01-008-154	B10LL5	WATER				11/21/00	1	R011153-01	7571-001
		Method Blank	WATER						R011153-03	7571-003
		Lab Control Sample	WATER						R011153-02	7571-002
		Duplicate (R011153-01)	WATER				11/21/00	1	R011153-04	7571-004
		Spike (R011153-01)	WATER				11/21/00	1	R011153-05	7571-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

SDG 7571
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1147

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
82B	WATER	Gross Beta in Water	6962-132	15.0	1			1	1	1/1		
88A	WATER	Gross Alpha in Water	6962-132	20.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	6962-132	10.0	1			1	1	1/1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

WORK SUMMARY

SDG 7571
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1147

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10LL5			R011153-01	7571-001	82B/82		01/10/01	01/15/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/20/00	7571-001	88A/88		01/08/01	01/15/01	MCM	Gross Alpha in Water
C01-008-154	C01-008		11/21/00	7571-001	H		12/21/00	01/15/01	MCM	Tritium in Water
Method Blank			R011153-03	7571-003	82B/82		01/11/01	01/15/01	MCM	Gross Beta in Water
		WATER		7571-003	88A/88		01/09/01	01/15/01	MCM	Gross Alpha in Water
	C01-008			7571-003	H		12/21/00	01/15/01	MCM	Tritium in Water
Lab Control Sample			R011153-02	7571-002	82B/82		01/10/01	01/15/01	MCM	Gross Beta in Water
		WATER		7571-002	88A/88		01/09/01	01/15/01	MCM	Gross Alpha in Water
	C01-008			7571-002	H		12/21/00	01/15/01	MCM	Tritium in Water
Duplicate (R011153-01)			R011153-04	7571-004	82B/82		01/11/01	01/15/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/20/00	7571-004	88A/88		01/09/01	01/15/01	MCM	Gross Alpha in Water
	C01-008		11/21/00	7571-004	H		12/21/00	01/15/01	MCM	Tritium in Water
Spike (R011153-01)			R011153-05	7571-005	H		12/21/00	01/15/01	MCM	Tritium in Water
Hanford Site		WATER	11/20/00							
	C01-008		11/21/00							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
82B/82	C01-008	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
88A/88	C01-008	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
H	C01-008	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
TOTALS				3			3	3	3	1	13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/15/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1147

R011153-03 Method Blank

METHOD BLANK

SDG	7571	Client/Case no	Hanford	SDG H1147	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R011153-03	Client sample id	Method Blank		
Dept sample id	7571-003	Material/Matrix		WATER	
		SAF No	C01-008		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.078	0.51	1.0	3.0	U	88A
Gross Beta	12587-47-2	-0.254	1.2	2.1	4.0	U	82B
Tritium	10028-17-8	0	230	400	400	U	H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-BLANK 36873

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

R011153-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7571
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1147
Case no TRC-SBB-207925

Lab sample id R011153-02
Dept sample id 7571-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No C01-008

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	71.7	5.3	1.1	3.0		88A	71.7	2.9	100	67-133	70-130
Gross Beta	82.1	3.7	2.1	4.0		82B	80.7	3.2	102	75-125	70-130
Tritium	9530	490	400	400		H	9920	400	96	83-117	80-120

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-LCS 36872

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

R011153-04 B10LL5

DUPLICATE

SDG 7571		Client/Case no Hanford	SDG H1147
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id R011153-04	Lab sample id R011153-01	Client sample id B10LL5	
Dept sample id 7571-004	Dept sample id 7571-001	Location/Matrix Hanford Site	WATER
	Received 11/21/00	Collected 11/20/00 12:39	
		Custody/SAF No C01-008-154	C01-008

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	0.409	0.95	1.7	3.0	U	88A	1.04	1.1	1.6	U	-		
Gross Beta	4.28	1.4	1.9	4.0		82B	3.31	1.8	2.8	J	26	96	
Tritium	3770	230	200	400		H	3790	230	200		1	25	

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-DUP#1 36874

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

R011153-05 B10LL5

MATRIX SPIKE

SDG 7571		Client/Case no Hanford	SDG H1147
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id R011153-05	Lab sample id R011153-01	Client sample id B10LL5	
Dept sample id 7571-005	Dept sample id 7571-001	Location/Matrix Hanford Site	WATER
	Received 11/21/00	Collected 11/20/00 12:39	
		Custody/SAF No C01-008-154	C01-008

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	23800	520	220	400		H	21000	840	3790	230	95	81-119	60-140

100HR3 IAM (1&2) GW Mon.-Nov. 2000

QC-MS#1 36875

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/15/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1147

R011153-01 B10LL5

DATA SHEET

SDG	7571	Client/Case no	Hanford	SDG H1147	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R011153-01	Client sample id	B10LL5		
Dept sample id	7571-001	Location/Matrix	Hanford Site	WATER	
Received	11/21/00	Collected	11/20/00 12:39		
		Custody/SAF No	C01-008-154	C01-008	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.04	1.1	1.6	3.0	U	88A
Gross Beta	12587-47-2	3.31	1.8	2.8	4.0	J	82B
Tritium	10028-17-8	3790	230	200	400		H

100HR3 IAM (1&2) GW Mon.-Nov. 2000

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

Test 82B Matrix WATER
SDG 7571
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1147

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 6962-132								
B10LL5	R011153-01	82		7571-001	3.31 J			
BLK (QC ID=36873)	R011153-03	82		7571-003	U			
LCS (QC ID=36872)	R011153-02	82		7571-002	ok			
Duplicate (R011153-01)	R011153-04	82		7571-004	ok			
Nominal values and limits from method			RDLs (pCi/L)		4.0			
100HR3 IAM (1&2) GW Mon.-Nov. 2000						Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-132	2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 132															
B10LL5	R011153-01	82		2.8	0.300			70		100			51	12/12/00	01/10	GRB-114
BLK (QC ID=36873)	R011153-03	82		2.1	0.300			27		100				12/12/00	01/11	GRB-115
LCS (QC ID=36872)	R011153-02	82		2.1	0.300			25		100				12/12/00	01/10	GRB-115
Duplicate (R011153-01) (QC ID=36874)	R011153-04	82		1.9	0.300			70		100			52	12/12/00	01/11	GRB-105
Nominal values and limits from method				4.0	0.300			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 2.2 ± 0.79
RESIDUE 48 ± 51

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

Test 88A Matrix WATER	Client Hanford
SDG 7571	Contract TRC-SBB-207925
Contact Melissa C. Mannion	Contract SDG H1147

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6962-132						
B10LL5	R011153-01	88		7571-001	U	
BLK (QC ID=36873)	R011153-03	88		7571-003	U	
LCS (QC ID=36872)	R011153-02	88		7571-002	ok	
Duplicate (R011153-01)	R011153-04	88		7571-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	3.0	
100HR3 IAM (1&2) GW Mon.-Nov. 2000						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-132 2σ prep error 20.0 % Reference Lab Notebook 6962 pg. 132																
B10LL5	R011153-01	88		1.6	0.300			90		100			49	12/12/00	01/08	GRB-116
BLK (QC ID=36873)	R011153-03	88		1.0	0.300			28		100				12/12/00	01/09	GRB-108
LCS (QC ID=36872)	R011153-02	88		1.1	0.300			27		100				12/12/00	01/09	GRB-107
Duplicate (R011153-01) (QC ID=36874)	R011153-04	88		1.7	0.300			80		100			50	12/12/00	01/09	GRB-110
Nominal values and limits from method				3.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-120	Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD	MDA	1.4	± 0.70
FOR 4 SAMPLES	RESIDUE	56	± 67

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/15/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1147

Test H Matrix WATER
SDG 7571
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1147

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium
Preparation batch 6962-132					
B10LL5	R011153-01			7571-001	3790
BLK (QC ID=36873)	R011153-03			7571-003	U
LCS (QC ID=36872)	R011153-02			7571-002	ok
Duplicate (R011153-01)	R011153-04			7571-004	ok
Spike (R011153-01)	R011153-05			7571-005	ok
Nominal values and limits from method				RDLs (pCi/L)	400
100HR3 IAM (1&2) GW Mon.-Nov. 2000					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-132	2σ prep error 10.0 %			Reference Lab Notebook 6962 pg. 132												
B10LL5	R011153-01			200	0.0500			20		100			31	12/19/00	12/21	LSC-005
BLK (QC ID=36873)	R011153-03			400	0.0500			10		100				12/19/00	12/21	LSC-005
LCS (QC ID=36872)	R011153-02			400	0.0500			10		100				12/19/00	12/21	LSC-005
Duplicate (R011153-01) (QC ID=36874)	R011153-04			200	0.0500			20		100			31	12/19/00	12/21	LSC-005
Spike (R011153-01) (QC ID=36875)	R011153-05			220	0.0500			18		100			31	12/19/00	12/21	LSC-005
Nominal values and limits from method				400	0.0500					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-210 Tritium in Water Samples by Distillation, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 280 ± 210
YIELD 16 ± 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/15/01

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-154

Page 1 of 1

Collector D. E. PARCHEN	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C01-008	Sampling Origin HANFORD SITE H1147 (7571)	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING NOVEMBER 2000	Logbook No. WM-SHWS-1439	Ice Chest No. SMC 160 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795407 50
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
Fax TMA log-in to JH Kessner (372-9487) & DL Stewart (372-1704).

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
✓ B10LL4 (F)		W	11-20-00	1239	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
✓ B10LL5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
✓ B10LL5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
✓ B10LL5		W			1x20-mL P	Activity Scan	None
✓ B10LL5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
✓ B10LL5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
✓ B10LL5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN		NOV 20 2000 1330	Fed Ex			11-20-00
Fed Ex			11-21-00 9:30	J R Corso		J R Corso	11-21-00 9:30

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

ThermoRetec
Richmond Laboratory

Analytical Services

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Battelle Hanford (PNNL) Date: 11-21-00

Ice chest # or description	SML 160					
Thermometer: time in	9:45					
Thermometer: time out	10:10					
Thermometer reading	5.0°C					
Thermometer number	2132					
Correction factor	—					
Actual temperature*	—					
Custody seals on ice chest intact?	Yes					
Custody seals dated ?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: J R Bower

Comments:

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford (PNNL) Date/Time received 11-21-00 9:30

CoC No. C01-008-154

Container I.D. No. SML-160 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [✓] Dry [ ]
6. Number of samples in shipping container: 1
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. *Describe any anomalies:* _____

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 11-21-00
14. Received by [signature] Date: 11-21-00 Time: 9:30

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____