0054659

H1155

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LJ2						
SILVER, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
SILVER, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
SILVER, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
BERYLLIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
BERYLLIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
COPPER, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
COPPER, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
IRON, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
IRON, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00

RECEIVED
APR 0 2 2001
EDMC

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
ANTIMONY, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
ANTIMONY, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	001	W	99L1827	11/29/00	12/18/00	12/28/00
ZINC, TOTAL	001 REP	W	99L1827	11/29/00	12/18/00	12/28/00
ZINC, TOTAL	001 MS	W	99L1827	11/29/00	12/18/00	12/28/00
B10LJ3						
SILVER, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	002	W	99L1827	11/29/00	12/18/00	12/28/00
B10LN2						
SILVER, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	003	W	99L1827	11/29/00	12/18/00	12/28/00
B10LN3						
SILVER, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	004	W	99L1827	11/29/00	12/18/00	12/28/00
B10LD4						
SILVER, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
ALUMINUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	005	W	99L1827	11/29/00	12/18/00	12/28/00
B10LD5						
SILVER, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
BARIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
BERYLLIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
CALCIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
CADMIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
COBALT, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
CHROMIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
COPPER, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
IRON, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
POTASSIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
MAGNESIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
MANGANESE, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
SODIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
NICKEL, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00
ANTIMONY, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
STRONTIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
VANADIUM, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/27/00
ZINC, TOTAL	006	W	99L1827	11/29/00	12/18/00	12/28/00

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

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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
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#: 0012L437
SDG/SAF#: H1155/C01-008

W.O.#: 10985-001-001-9999-00
Date Received: 12-02-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 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) with the exception of the ending CCVs for Beryllium, Calcium, Cadmium, Chromium, Iron, Magnesium, Manganese, Nickle, Potassium, Sodium, and Zinc. There is no impact to the QC samples as they were surrounded by CCVs that were in control. The samples were rerun for Beryllium, Calcium, Cadmium, Chromium, Iron, Magnesium, Manganese, Nickle, Potassium, Sodium, and Zinc in file PS1228A.

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), MB value less than 5% of the RCRA limit, 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 80-120% control limits. Refer to form 7.

10. All matrix spike (MS) recoveries were within 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 24 pages.

11. All duplicate analyses were within 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

01-09-01
Date

gmb/m12-437

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0012L437

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10LJ2	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Barium, Total	71.4		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	101000		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	70.9		UG/L	4.9	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	321		UG/L	21.8	1.0
		Potassium, Total	4940		UG/L	303	1.0
		Magnesium, Total	22200		UG/L	27.4	1.0
		Manganese, Total	13.9		UG/L	2.3	1.0
		Sodium, Total	13800		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	515		UG/L	0.10	1.0
		Vanadium, Total	6.7		UG/L	0.80	1.0
		Zinc, Total	2.7	u	UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155

RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LJ3	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	37.8		UG/L	22.7	1.0
		Barium, Total	72.6		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	103000		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	119		UG/L	4.9	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	798		UG/L	21.8	1.0
		Potassium, Total	4920		UG/L	303	1.0
		Magnesium, Total	22200		UG/L	27.4	1.0
		Manganese, Total	17.9		UG/L	2.3	1.0
		Sodium, Total	13500		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	516		UG/L	0.10	1.0
		Vanadium, Total	9.1		UG/L	0.80	1.0
		Zinc, Total	2.8		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B10LN2	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Barium, Total	48.6		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	67400		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	21.7		UG/L	4.9	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	77.1		UG/L	21.8	1.0
		Potassium, Total	3590		UG/L	303	1.0
		Magnesium, Total	14200		UG/L	27.4	1.0
		Manganese, Total	12.4		UG/L	2.3	1.0
		Sodium, Total	13300		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	331		UG/L	0.10	1.0
		Vanadium, Total	9.3		UG/L	0.80	1.0
		Zinc, Total	154		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B10LN3	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Barium, Total	47.4		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	66200		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	24.4		UG/L	4.9	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	657		UG/L	21.8	1.0
		Potassium, Total	3550		UG/L	303	1.0
		Magnesium, Total	14000		UG/L	27.4	1.0
		Manganese, Total	10.9		UG/L	2.3	1.0
		Sodium, Total	13000		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	324		UG/L	0.10	1.0
		Vanadium, Total	9.6		UG/L	0.80	1.0
		Zinc, Total	176		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B10LD4	Silver, Total	1.1		UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Barium, Total	54.2		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	84600		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	583		UG/L	4.9	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	3880		UG/L	303	1.0
		Magnesium, Total	17700		UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	10400		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Strontium, Total	472		UG/L	0.10	1.0
		Vanadium, Total	5.7		UG/L	0.80	1.0
		Zinc, Total	186		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B10LD5	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	44.1		UG/L	22.7	1.0
		Barium, Total	54.7		UG/L	0.20	1.0
		Beryllium, Total	0.60	u	UG/L	0.60	1.0
		Calcium, Total	84700		UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	608		UG/L	4.9	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	366		UG/L	21.8	1.0
		Potassium, Total	4000		UG/L	303	1.0
		Magnesium, Total	17700		UG/L	27.4	1.0
		Manganese, Total	4.2		UG/L	2.3	1.0
		Sodium, Total	10300		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	1.0
		Antimony, Total	2.4		UG/L	2.3	1.0
		Strontium, Total	474		UG/L	0.10	1.0
		Vanadium, Total	7.1		UG/L	0.80	1.0
		Zinc, Total	240		UG/L	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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	0.60	u	UG/L	0.60	1.0
		Calcium, Total	19.2	u	UG/L	19.2	1.0
		Cadmium, Total	3.4	u	UG/L	3.4	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	4.9	u	UG/L	4.9	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	303	u	UG/L	303	1.0
		Magnesium, Total	27.4	u	UG/L	27.4	1.0
		Manganese, Total	2.3	u	UG/L	2.3	1.0
		Sodium, Total	44.2		UG/L	22.9	1.0
		Nickel, Total	12.5	u	UG/L	12.5	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	2.7	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10LJ2	Silver, Total	47.1	1.1 u	50.0	94.2	1.0
		Aluminum, Total	1910	22.7 u	2000	95.5	1.0
		Barium, Total	1860	71.4	2000	89.6	1.0
		Beryllium, Total	45.3	0.60u	50.0	90.6	1.0
		Calcium, Total	124000	101000	25000	90.3*	1.0
		Cadmium, Total	47.2	3.4 u	50.0	94.4	1.0
		Cobalt, Total	457	0.90u	500	91.4	1.0
		Chromium, Total	253	70.9	200	91.0	1.0
		Copper, Total	223	0.90u	250	89.2	1.0
		Iron, Total	1230	321	1000	91.2	1.0
		Potassium, Total	28100	4940	25000	92.7	1.0
		Magnesium, Total	45100	22200	25000	91.6	1.0
		Manganese, Total	473	13.9	500	91.8	1.0
		Sodium, Total	36400	13800	25000	90.3	1.0
		Nickel, Total	467	12.5 u	500	93.5	1.0
		Antimony, Total	503	2.3 u	500	100.7	1.0
		Strontium, Total	1440	515	1000	92.4	1.0
		Vanadium, Total	490	6.7	500	96.8	1.0
		Zinc, Total	456	2.7 u	500	91.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10LJ2	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	22.7 u	22.7 u	NC	1.0
		Barium, Total	71.4	71.0	0.56	1.0
		Beryllium, Total	0.60u	0.60u	NC	1.0
		Calcium, Total	101000	101000	0.058	1.0
		Cadmium, Total	3.4 u	3.4 u	NC	1.0
		Cobalt, Total	0.90u	0.90u	NC	1.0
		Chromium, Total	70.9	72.4	2.1	1.0
		Copper, Total	0.90u	0.90u	NC	1.0
		Iron, Total	321	325	0.99	1.0
		Potassium, Total	4940	5100	3.1	1.0
		Magnesium, Total	22200	21900	1.2	1.0
		Manganese, Total	13.9	13.7	1.4	1.0
		Sodium, Total	13800	13400	2.5	1.0
		Nickel, Total	12.5 u	12.5 u	NC	1.0
		Antimony, Total	2.3 u	2.3 u	NC	1.0
		Strontium, Total	515	509	1.1	1.0
		Vanadium, Total	6.7	7.1	5.8	1.0
		Zinc, Total	2.7 u	2.7 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/09/01

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

0012L437

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: SPRC Del: Std TAT: 30 day

Date Rec'd: 12-2-00 Date Due: 1-1-00

Account #:

		A	B
Refrigerator #		S	S
#/Type Container	Liquid	1PL	1PL
	Solid		
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	—
ANALYSES REQUESTED → ORGANIC	VOA		
	BNA		
	Pest/PCB		
	Herb		
INORG	Metal		IC
	CN		ANIONS
RECRA LabNet Use Only		(1) Metal	(1) IC

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	Metal	IC
001	B10CT2			W	11/29/00	0919	1	
002	T3					1	1	1
003	N2					1041	1	
004	N3					1	1	1
005	D4					0956	1	
006	D5					1	1	1

Special Instructions:

DATE/REVISIONS:

Mt (1) 1. Al, Ag, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, K,
1 2. Mg, Mn, Ni, Na, Sb, Sr, V, Zn
IC (1) 3. Br, Cl, F, NO2, NO3, PO4, SO4
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # Fed Ex
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

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-2-00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 8214 8983 0169

21

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SOG HILSS

C.O.C. # C01-008-1

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 1AM (1&2) GW MONITORING NOVEMBER 2000	Logbook No.: WM-SAWS-H39	Ice Chest No.: 71 SAMP-127 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 0853
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
B10LJ2 (F)		W	11-29-00	0919	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LJ3		W			1x20-mL P	Activity Scan	None
B10LJ3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LJ3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LJ3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN		1343 NOV 29 2000	Fed Ex			11/29/00
FEDERAL EXPRESS			11-30-00 9:30 AM	E. SEGURO			11/30/00 9:30 AM
Fed Ex			12-2-00 1015				12-2-00 1015

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

22

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SOG 41155

C.O.C. # C01-008-2

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. WIN-5746-H-34	Ice Chest No. 5M2840105 127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LN2 (F)		W	11/29/00	1041	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LN3		W			1x20-mL P	Activity Scan	None
B10LN3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LN3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LN3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN	DE Parchen	1343 NOV 29 2000	Fed Ex			11/29/00
FED. EXPRESS			11/30/00 9:30	L. SEGURO		L. Segure	11/30/00 9:30 AM
Fed Ex			12-2-00 1015	V. Kennedy			12-2-00 1015

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG HLISS

C.O.C. # C01-008-3

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. WIRT-SHWS-1139	Ice Chest No. SMIL 127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LD4 (F)		W	11-29-00	0956	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD5		W			1x20-mL P	Activity Scan	None
B10LD5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LD5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LD5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN	1343	NOV 29 2000	Fed Ex.			11/29/00
FED EXPRESS			11/30/00 9:20	G. SEGURO			11/30/00 9:20
Fed Ex			12-2-00 1015	V. Hernandez			12-2-00 1015

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 H1155 was composed of three water samples designated under SAF No. C01-008 with a Project Designation of: 100HR3 IAM (1 & 2) GW Monitoring, November 2000.

The samples were 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

1/18/01
Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

SAMPLE SUMMARY

SDG 7578
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1155

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10LD5	Hanford Site	WATER		R011206-03	C01-008	C01-008-3	11/29/00 09:56
B10LJ3	Hanford Site	WATER		R011206-01	C01-008	C01-008-1	11/29/00 09:19
B10LN3	Hanford Site	WATER		R011206-02	C01-008	C01-008-2	11/29/00 10:41
Method Blank		WATER		R011206-05	C01-008		
Lab Control Sample		WATER		R011206-04	C01-008		
Duplicate (R011206-01)	Hanford Site	WATER		R011206-06	C01-008		11/29/00 09:19
Spike (R011206-01)	Hanford Site	WATER		R011206-07	C01-008		11/29/00 09:19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

QC SUMMARY

SDG 7578
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1155

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
7578	C01-008-1	B10LJ3	WATER				11/30/00	1	R011206-01	7578-001
	C01-008-2	B10LN3	WATER				11/30/00	1	R011206-02	7578-002
	C01-008-3	B10LD5	WATER				11/30/00	1	R011206-03	7578-003
		Method Blank	WATER						R011206-05	7578-005
		Lab Control Sample	WATER						R011206-04	7578-004
		Duplicate (R011206-01)	WATER				11/30/00	1	R011206-06	7578-006
		Spike (R011206-01)	WATER				11/30/00	1	R011206-07	7578-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

SDG 7578
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1155

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	6962-154	15.0	3			1	1	1/1		
88A	WATER	Gross Alpha in Water	6962-154	20.0	3			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	6962-154	10.0	3			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 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

WORK SUMMARY

SDG 7578
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1155

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10LD5			R011206-03	7578-003	82B/82		01/15/01	01/18/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/29/00	7578-003	88A/88		01/12/01	01/18/01	MCM	Gross Alpha in Water
C01-008-3	C01-008		11/30/00	7578-003	H		12/30/00	01/18/01	MCM	Tritium in Water
B10LJ3			R011206-01	7578-001	82B/82		01/15/01	01/18/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/29/00	7578-001	88A/88		01/12/01	01/18/01	MCM	Gross Alpha in Water
C01-008-1	C01-008		11/30/00	7578-001	H		12/30/00	01/18/01	MCM	Tritium in Water
B10LN3			R011206-02	7578-002	82B/82		01/15/01	01/18/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/29/00	7578-002	88A/88		01/12/01	01/18/01	MCM	Gross Alpha in Water
C01-008-2	C01-008		11/30/00	7578-002	H		12/30/00	01/18/01	MCM	Tritium in Water
Method Blank			R011206-05	7578-005	82B/82		01/16/01	01/18/01	MCM	Gross Beta in Water
		WATER		7578-005	88A/88		01/16/01	01/18/01	MCM	Gross Alpha in Water
	C01-008			7578-005	H		12/30/00	01/18/01	MCM	Tritium in Water
Lab Control Sample			R011206-04	7578-004	82B/82		01/16/01	01/18/01	MCM	Gross Beta in Water
		WATER		7578-004	88A/88		01/12/01	01/18/01	MCM	Gross Alpha in Water
	C01-008			7578-004	H		12/30/00	01/18/01	MCM	Tritium in Water
Duplicate (R011206-01)			R011206-06	7578-006	82B/82		01/16/01	01/18/01	MCM	Gross Beta in Water
Hanford Site		WATER	11/29/00	7578-006	88A/88		01/16/01	01/18/01	MCM	Gross Alpha in Water
	C01-008		11/30/00	7578-006	H		12/30/00	01/18/01	MCM	Tritium in Water
Spike (R011206-01)			R011206-07	7578-007	H		12/30/00	01/18/01	MCM	Tritium in Water
Hanford Site		WATER	11/29/00							
	C01-008		11/30/00							

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	3			1	1	1		6
88A/88	C01-008	Gross Alpha in Water	900.0_ALPHABETA_GPC	3			1	1	1		6
H	C01-008	Tritium in Water	906.0_H3_LSC	3			1	1	1	1	7
TOTALS				9			3	3	3	1	19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/18/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1155

R011206-05 Method Blank

METHOD BLANK

SDG	7578	Client/Case no	Hanford	SDG H1155	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R011206-05	Client sample id	Method Blank		
Dept sample id	7578-005	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	-0.010	0.49	0.97	3.0	U	88A
Gross Beta	12587-47-2	0.100	1.6	2.7	4.0	U	82B
Tritium	10028-17-8	112	230	380	400	U	H

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

QC-BLANK 36988

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

R011206-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7578
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1155
Case no TRC-SBB-207925

Lab sample id R011206-04
Dept sample id 7578-004

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	78.1	5.2	0.94	3.0		88A	71.7	2.9	109	65-135	70-130
Gross Beta	81.6	3.6	1.8	4.0		82B	80.7	3.2	101	76-124	70-130
Tritium	10100	460	380	400		H	9900	400	102	82-118	80-120

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

QC-LCS 36987

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

R011206-06 B10LJ3

DUPLICATE

SDG	7578			Client/Case no	Hanford SDG H1155
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R011206-06	Lab sample id	R011206-01	Client sample id	B10LJ3
Dept sample id	7578-006	Dept sample id	7578-001	Location/Matrix	Hanford Site WATER
		Received	11/30/00	Collected	11/29/00 09:19
				Custody/SAF No	C01-008-1 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	1.04	1.4	2.1	3.0	U	88A	0.737	1.5	2.6	U	-		
Gross Beta	7.08	1.7	2.2	4.0		82B	4.71	1.9	2.8		40	73	
Tritium	8240	290	190	400		H	7980	280	190		3	22	

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

QC-DUP#1 36989

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

R011206-07 B10LJ3

MATRIX SPIKE

SDG 7578		Client/Case no Hanford	SDG H1155
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id R011206-07	Lab sample id R011206-01	Client sample id B10LJ3	
Dept sample id 7578-007	Dept sample id 7578-001	Location/Matrix Hanford Site	WATER
	Received 11/30/00	Collected 11/29/00 09:19	
		Custody/SAF No C01-008-1	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	28800	540	220	400		H	20800	830	7980	280	100	77-123	60-140

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

QC-MS#1 36990

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 01/18/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1155

R011206-03 B10LD5

DATA SHEET

SDG	7578	Client/Case no	Hanford	SDG H1155	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R011206-03	Client sample id	B10LD5		
Dept sample id	7578-003	Location/Matrix	Hanford Site	WATER	
Received	11/30/00	Collected	11/29/00 09:56		
		Custody/SAF No	C01-008-3	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	1.53	1.5	2.3	3.0	U	88A
Gross Beta	12587-47-2	5.16	1.6	2.2	4.0		82B
Tritium	10028-17-8	1930	170	190	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	01/18/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1155

R011206-01 B10LJ3

DATA SHEET

SDG	7578	Client/Case no	Hanford	SDG H1155	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R011206-01	Client sample id	B10LJ3		
Dept sample id	7578-001	Location/Matrix	Hanford Site	WATER	
Received	11/30/00	Collected	11/29/00 09:19		
		Custody/SAF No	C01-008-1	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	0.737	1.5	2.6	3.0	U	88A
Gross Beta	12587-47-2	4.71	1.9	2.8	4.0		82B
Tritium	10028-17-8	7980	280	190	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	01/18/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1155

R011206-02 **B10LN3**

DATA SHEET

SDG	7578	Client/Case no	Hanford SDG H1155
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R011206-02	Client sample id	B10LN3
Dept sample id	7578-002	Location/Matrix	Hanford Site WATER
Received	11/30/00	Collected	11/29/00 10:41
		Custody/SAF No	C01-008-2 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	0.676	1.1	1.8	3.0	U	88A
Gross Beta	12587-47-2	4.72	1.9	2.8	4.0		82B
Tritium	10028-17-8	15300	370	190	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	01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

Test 82B Matrix WATER	Client Hanford
SDG 7578	Contract TRC-SBB-207925
Contact Melissa C. Mannion	Contract SDG H1155

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

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 6962-154								
B10LD5	R011206-03	82		7578-003	5.16			
B10LJ3	R011206-01	82		7578-001	4.71			
B10LN3	R011206-02	82		7578-002	4.72			
BLK (QC ID=36988)	R011206-05	82		7578-005	U			
LCS (QC ID=36987)	R011206-04	82		7578-004	ok			
Duplicate (R011206-01)	R011206-06	82		7578-006	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 6962-154	2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 154															
B10LD5	R011206-03	82		2.2	0.300			98		100			47	12/16/00	01/15	GRB-115
B10LJ3	R011206-01	82		2.8	0.300			123		100			47	12/16/00	01/15	GRB-112
B10LN3	R011206-02	82		2.8	0.300			81		100			47	12/16/00	01/15	GRB-114
BLK (QC ID=36988)	R011206-05	82		2.7	0.300			24		100				12/16/00	01/16	GRB-114
LCS (QC ID=36987)	R011206-04	82		1.8	0.300			24		100				12/16/00	01/16	GRB-107
Duplicate (R011206-01) (QC ID=36989)	R011206-06	82		2.2	0.300			120		100			48	12/16/00	01/16	GRB-115
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	MDA	2.4	± 0.82
FOR 6 SAMPLES	RESIDUE	78	± 90

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

Test 88A Matrix WATER
SDG 7578
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1155

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6962-154						
B10LD5	R011206-03	88		7578-003	U	
B10LJ3	R011206-01	88		7578-001	U	
B10LN3	R011206-02	88		7578-002	U	
BLK (QC ID=36988)	R011206-05	88		7578-005	U	
LCS (QC ID=36987)	R011206-04	88		7578-004	ok	
Duplicate (R011206-01)	R011206-06	88		7578-006	-	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 6962-154	2σ prep error 20.0 %				Reference Lab Notebook 6962 pg. 154											
B10LD5	R011206-03	88		2.3	0.300			108		100			44	12/19/00	01/12	GRB-115
B10LJ3	R011206-01	88		2.6	0.300			130		100			44	12/19/00	01/12	GRB-113
B10LN3	R011206-02	88		1.8	0.300			103		100			44	12/19/00	01/12	GRB-114
BLK (QC ID=36988)	R011206-05	88		0.97	0.300			29		100				12/19/00	01/16	GRB-105
LCS (QC ID=36987)	R011206-04	88		0.94	0.300			28		100				12/19/00	01/12	GRB-116
Duplicate (R011206-01) (QC ID=36989)	R011206-06	88		2.1	0.300			137		100			48	12/19/00	01/16	GRB-105
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 FOR 6 SAMPLES
MDA 1.8 ± 1.4
RESIDUE 89 ± 97

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/18/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1155

Test H Matrix WATER
SDG 7578
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1155

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium
Preparation batch 6962-154					
B10LD5	R011206-03			7578-003	1930
B10LJ3	R011206-01			7578-001	7980
B10LN3	R011206-02			7578-002	15300
BLK (QC ID=36988)	R011206-05			7578-005	U
LCS (QC ID=36987)	R011206-04			7578-004	ok
Duplicate (R011206-01)	R011206-06			7578-006	ok
Spike (R011206-01)	R011206-07			7578-007	ok
Nominal values and limits from method 100HR3 IAM (1&2) GW Mon.-Nov. 2000				RDLs (pCi/L)	400

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 6962-154 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 154																
B10LD5	R011206-03			190	0.0500			20		100			31	12/29/00	12/30	LSC-004
B10LJ3	R011206-01			190	0.0500			20		100			31	12/29/00	12/30	LSC-004
B10LN3	R011206-02			190	0.0500			20		100			31	12/29/00	12/30	LSC-004
BLK (QC ID=36988)	R011206-05			380	0.0500			10		100				12/29/00	12/30	LSC-004
LCS (QC ID=36987)	R011206-04			380	0.0500			10		100				12/29/00	12/30	LSC-004
Duplicate (R011206-01) (QC ID=36989)	R011206-06			190	0.0500			20		100			31	12/29/00	12/30	LSC-004
Spike (R011206-01) (QC ID=36990)	R011206-07			220	0.0500			18		100			31	12/29/00	12/30	LSC-004
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 7 SAMPLES
MDA 250 ± 180
YIELD 17 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/18/01

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-3

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 H1155 (7578)	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WRI-SAWS-1439	Ice Chest No. SMI 127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LD4 (F)		W	11-29-00	0956	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD5		W			1x20-mL P	Activity Scan	None
B10LD5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LD5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LD5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN	1343	NOV 29 2000	Fed Ex.			11/29/00
Relinquished By			Date/Time	Received By			Date/Time
FED EXPRESS			11/30/00 9:30	G. SEGURO			11/30/00 9:30
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-1

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 H1155 (7578)	Purchase Order/Charge Code
Project Title 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WM-SAWS-H39	Ice Chest No. 71 SMA-127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LJ2 (F)		W	11-29-00	0919	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LJ3		W			1x20-mL P	Activity Scan	None
B10LJ3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LJ3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LJ3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN	1343	NOV 29 2000	Fed Ex			11/29/00
Relinquished By			Date/Time 9:30 AM	Received By			Date/Time 9:30 AM
FEDERAL EXPRESS			11-30-00	E. SEGURO			11/30/00
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C01-008-2

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 H1155 (7578)	Purchase Order/Charge Code
Project Title: 100HR3 IAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No.: WIN-5AWS-H 34	Ice Chest No.: SM2 640105 127 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7954 0853
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
B10LN2 (F)		W	11/29/00	1041	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LN3		W			1x20-mL P	Activity Scan	None
B10LN3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LN3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LN3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. E. PARCHEN	DEParchen	1343 NOV 29 2000	Fed Ex			11/29/00
FED. EXPRESS			11/30/00 9:20	E. SEGURO		E. Segure	11/30/00 9:20

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 (WMTS) BECHTEL HANFORD INC. (PNNL) Date: 11/30/00 9:30 AM

Ice chest # or description	SML-127					
Thermometer: time in	10:15 AM					
Thermometer: time out	11:00 AM					
Thermometer reading	4°C					
Thermometer number	2132					
Correction factor	NONE					
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:_____

Comments:_____

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: (WMTS) BECHTEL HANFORD (PNNL) Date/Time received 11-30-00 9:30 AM

CoC No. C01-008-1, 2, 3, AND 4.

Container I.D. No. SML-127 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: 8
7. Number of containers per sample: PLEASE CHECK (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 _____
14. Received by E. Segura Date: 11-30-00 Time: 9:30 AM

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10LJ3						
BROMIDE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
CHLORIDE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
FLUORIDE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRITE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRATE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
PHOSPHATE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
SULFATE BY IC	002	W	00LIC078	11/29/00	12/08/00	12/08/00
B10LN3						
BROMIDE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
BROMIDE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
BROMIDE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
CHLORIDE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
CHLORIDE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
CHLORIDE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
FLUORIDE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
FLUORIDE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
FLUORIDE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRITE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRITE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRITE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRATE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRATE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRATE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
PHOSPHATE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
PHOSPHATE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
PHOSPHATE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
SULFATE BY IC	004	W	00LIC078	11/29/00	12/08/00	12/08/00
SULFATE BY IC	004 REP	W	00LIC078	11/29/00	12/08/00	12/08/00
SULFATE BY IC	004 MS	W	00LIC078	11/29/00	12/08/00	12/08/00
B10LD5						
BROMIDE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD C01-008 H1155

DATE RECEIVED: 12/02/00 RFW LOT # :0012L437

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00
FLUORIDE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRITE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00
NITRATE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00
PHOSPHATE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00
SULFATE BY IC	006	W	00LIC078	11/29/00	12/08/00	12/08/00

LAB QC:

BROMIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
BROMIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
BROMIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
NITRITE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
NITRITE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
NITRITE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
PHOSPHATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
PHOSPHATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
PHOSPHATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C01-008 H1155
RFW# : 0012L437

W.O. # : 10985-001-001-9999-00
Date Received: 12-02-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 3 water samples.

2. The samples were 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 which were received past hold.

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

01-10-01
Date

njp\i15-437

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 14 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.

L-WI-034/D-6/99

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B10LJ3	Bromide by IC	1.2	u	MG/L	1.2	5.0
		Chloride by IC	39.7		MG/L	1.2	5.0
		Fluoride by IC	1.0	u	MG/L	1.0	2.0
		Nitrite by IC	1.2	u	MG/L	1.2	5.0
		Nitrate by IC	78		MG/L	5.0	20
		Phosphate by IC	0.50	u	MG/L	0.50	2.0
		Sulfate by IC	149		MG/L	5.0	20.0
-004	B10LN3	Bromide by IC	0.50	u	MG/L	0.50	2.0
		Chloride by IC	20.4		MG/L	2.5	10.0
		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	33		MG/L	2.5	10
		Phosphate by IC	0.50	u	MG/L	0.50	2.0
		Sulfate by IC	82.5		MG/L	2.5	10.0
-006	B10LD5	Bromide by IC	1.2	u	MG/L	1.2	5.0
		Chloride by IC	28.0		MG/L	1.2	5.0
		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	54		MG/L	5.0	20
		Phosphate by IC	0.50	u	MG/L	0.50	2.0
		Sulfate by IC	116		MG/L	5.0	20.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/15/00

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LIC078-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 12/15/00

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B10LN3	Bromide by IC	8.9	0.00	10.0	89.5	2.0
		Chloride by IC	114	20.4	100	94.0	20.0
		Fluoride by IC	21.6	0.085	20.0	107.7	2.0
		Nitrite by IC	10	0.50u	10	103.4	2.0
		Nitrate by IC	130	33	~~5.0~~	~~1993~~ 107.7	20
		Phosphate by IC	9.1	0.50u	10.0	91.1	2.0
		Sulfate by IC	184	82.5	100	101.1	20.0
BLANK10	00LIC078-MB1	Bromide by IC	4.9	0.25u	5.0	97.8	1.0
		Bromide by IC MSD	4.9	0.25u	5.0	97.8	1.0
		Chloride by IC	5.0	0.25u	5.0	99.2	1.0
		Chloride by IC MSD	4.7	0.25u	5.0	94.2	1.0
		Fluoride by IC	10.7	0.50u	10.0	107.4	1.0
		Fluoride by IC MSD	10.2	0.50u	10.0	101.7	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.2	1.0
		Nitrite by IC MSD	4.9	0.25u	5.0	98.7	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.1	1.0
		Nitrate by IC MSD	4.9	0.25u	5.0	97.2	1.0
		Phosphate by IC	5.0	0.25u	5.0	100.6	1.0
		Phosphate by IC MSD	5.1	0.25u	5.0	102.4	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.1	1.0
		Sulfate by IC MSD	4.8	0.25u	5.0	95.7	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	00LIC078-MB1	Bromide by IC	97.8	97.8	0.061
		Chloride by IC	99.2	94.2	5.1
		Fluoride by IC	107.4	101.7	5.4
		Nitrite by IC	98.2	98.7	0.47
		Nitrate by IC	97.1	97.2	0.062
		Phosphate by IC	100.6	102.4	1.7
		Sulfate by IC	96.1	95.7	0.40

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/15/00

CLIENT: TNUHANFORD C01-008 H1155 RECRA LOT #: 0012L437

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B10LN3	Bromide by IC	0.50u	0.50u	NC	2.0
		Chloride by IC	20.4	20.3	0.23	10.0
		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	33	33	0.24	10
		Phosphate by IC	0.50u	0.50u	NC	2.0
		Sulfate by IC	82.5	82.2	0.31	10.0

RECRA LabNet Use Only

00121437

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNL HANFORD SAF C01-008

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPRC Del Std TAT 30 day

Date Rec'd 12-2-00 Date Due 1-1-00

Account #

		A	B
Refrigerator #		S	S
#/Type Container	Liquid	1PL	1PL
	Solid		
Volume	Liquid	500	500
	Solid		
Preservatives		HNO3	—
ANALYSES REQUESTED	ORGANIC: VOA, BNA, Pest/PCB, Herb		
	INORG: Metal, CN, IC Anions		
RECRA LabNet Use Only		Mtl (1)	IC (1)

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	Mtl (1)	IC (1)
001	B10CJ2			W	11/29/00	0919	1	
002	J3					1	1	1
003	N2					1041	1	
004	N3					1	1	1
005	D4					0956	1	
006	D5					1	1	1

Special Instructions:

DATE/REVISIONS:

Mtl (1) 1. Al, Ag, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, K,
1 2. Mg, 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 # 5a
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

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-2-00	1015

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

8214 8983 0169

7/02 7/03 8/04 mid past hold

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SOG HILSS

C.O.C. # C01-008-1

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-SAWS-H39	Ice Chest No. 71 SMA-127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LJ2 (F)		W	11-29-00	0919	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LJ3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LJ3		W			1x20-mL P	Activity Scan	None
B10LJ3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LJ3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LJ3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. E. PARCHEN		1343	NOV 29 2000	Fed Ex			11/29/00
FEDERAL EXPRESS			11-30-00 9:30 AM	E. SEGURO			11/30/00 9:30 AM
Fed Ex			12-2-00 1015				12-2-00 1015

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG 41155

C.O.C. # C01-008-2

Page 1 of 10

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 JAM (1&2) GW MONITORING, NOVEMBER, 2000	Logbook No. WIM-5 BWS-H-34	Ice Chest No. SM2 840105 127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LN2 (F)		W	11-29-00	1041	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LN3		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LN3		W			1x20-mL P	Activity Scan	None
B10LN3		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LN3		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LN3		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D.E. PARCHEN	DEParchen 1343	NOV 29 2000		Fed Ex		11/29/00
Relinquished By			Date/Time	Received By			Date/Time
FED. EXPRESS			11/30/00 9:20	E. SEGURO			11/30/00 9:20 AM
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			12-2-00 1015				12-2-00 1015
Relinquished By			Date/Time	Received By			Date/Time

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CHEM SDG HIISS

C.O.C. # C01-008-3

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. WHC-SH-WS-1134	Ice Chest No. SMH 127 Temp.
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235 7954 0853
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
B10LD4 (F)		W	11-29-00	0956V	1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL G/P	ICP Metals - 6010A RCRA GW	HNO3 to pH <2
B10LD5		W			1x500-mL P	IC Anions - 300.0	Cool 4C
B10LD5		W			1x20-mL P	Activity Scan	None
B10LD5		W			2x1000-mL G/P	Gross Alpha	HNO3 to pH <2
B10LD5		W			2x1000-mL G/P	Gross Beta	HNO3 to pH <2
B10LD5		W			1x250-mL P	Tritium - H3	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D. E. PARCHEN		1343	NOV 29 2000	Fed Ex.			11/29/00
FED EXPRESS			11/30/00 9:30 A	G. SEGURO			11/30/00 9:30 A
Fed Ex			12-2-00 1015	V. Kennedy			12-2-00 1015

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