

Thermo Retec  
W.O. No. N9-11-082-7278

Bechtel Hanford Inc.  
SDG H0617

Case Narrative

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## 1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0617 was composed of three liquid (water) samples designated under SAF No. C00-005 with a Project Designation of: 100-HR3-IAM (1&2) GW Monitoring, November 1999.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist.

## 2.0 ANALYSIS NOTES

### 2.1 Gross Alpha and Gross Beta Analyses

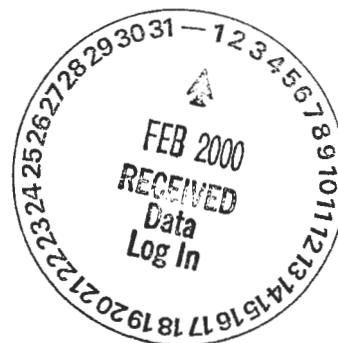
No problems were encountered during the course of the analyses.

### 2.2 Tritium Analyses

No problems were encountered during the course of the analyses.

**RECEIVED**  
MAR 20 2000

**EDMC**



**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0617

SDG 7278  
Contact Melissa C. Mannion

**SAMPLE SUMMARY**

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG H0617

| CLIENT SAMPLE ID       | LOCATION     | MATRIX | LEVEL | LAB<br>SAMPLE ID | SAF NO  | CHAIN OF<br>CUSTODY | COLLECTED      |
|------------------------|--------------|--------|-------|------------------|---------|---------------------|----------------|
| B0WR07                 | Hanford Site | WATER  |       | N911082-02       | C00-005 | C00-005-155         | 11/04/99 09:49 |
| B0WR52                 | Hanford Site | WATER  |       | N911082-03       | C00-005 | C00-005-111         | 11/04/99 09:48 |
| B0WRB9                 | Hanford Site | WATER  |       | N911082-01       | C00-005 | C00-005-107         | 11/04/99 08:35 |
| Method Blank           |              | WATER  |       | N911082-05       | C00-005 |                     |                |
| Lab Control Sample     |              | WATER  |       | N911082-04       | C00-005 |                     |                |
| Duplicate (N911082-01) | Hanford Site | WATER  |       | N911082-06       | C00-005 |                     | 11/04/99 08:35 |
| Spike (N911082-02)     | Hanford Site | WATER  |       | N911082-07       | C00-005 |                     | 11/04/99 09:49 |

SAMPLE SUMMARY

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CS  
Version 3.06  
Report date 01/31/00

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

SDG 7278

Contact Melissa C. Mannion

## PREP BATCH SUMMARY

Client HanfordContract TRB-SBB-207925Case no SDG H0617

| TEST                          | MATRIX | METHOD               | PREPARATION ERROR |      | PLANCHETS ANALYZED |      |    |       | QUALI- |          |         |       |
|-------------------------------|--------|----------------------|-------------------|------|--------------------|------|----|-------|--------|----------|---------|-------|
|                               |        |                      | BATCH             | 2σ % | CLIENT             | MORE | RE | BLANK | LCS    | DUP/ORIG | MS/ORIG | FIERS |
| Gas Proportional Counting     |        |                      |                   |      |                    |      |    |       |        |          |         |       |
| 82B                           | WATER  | Gross Beta in Water  | 6909-048          | 15.0 | 3                  |      |    | 1     | 1      | 1/1      |         |       |
| 88A                           | WATER  | Gross Alpha in Water | 6909-048          | 20.0 | 3                  |      |    | 1     | 1      | 1/1      |         |       |
| Liquid Scintillation Counting |        |                      |                   |      |                    |      |    |       |        |          |         |       |
| H                             | WATER  | Tritium in Water     | 6909-048          | 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.

PREP BATCH SUMMARY

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-PBSVersion 3.06Report date 01/31/00



## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

SDG 7278

Contact Melissa C. Mannion

## WORK SUMMARY

Client HanfordContract TRB-SBB-207925Case no SDG H0617

| CLIENT SAMPLE ID       |         | LAB SAMPLE ID |          |        |     |          |          |     |                      |  |  |  |  |
|------------------------|---------|---------------|----------|--------|-----|----------|----------|-----|----------------------|--|--|--|--|
| LOCATION               | MATRIX  | COLLECTED     |          | SUF-   |     |          |          |     |                      |  |  |  |  |
| CUSTODY                | SAF No  | RECEIVED      | PLANCHET | TEST   | FIX | ANALYZED | REVIEWED | BY  | METHOD               |  |  |  |  |
| BOWR07                 |         | N911082-02    | 7278-002 | 82B/82 |     | 12/28/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
| Hanford Site           |         | 11/04/99      | 7278-002 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
| C00-005-155            | C00-005 | 11/05/99      | 7278-002 | H      |     | 12/08/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| BOWR52                 |         | N911082-03    | 7278-003 | 82B/82 |     | 12/29/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
| Hanford Site           |         | 11/04/99      | 7278-003 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
| C00-005-111            | C00-005 | 11/05/99      | 7278-003 | H      |     | 12/08/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| BOWRB9                 |         | N911082-01    | 7278-001 | 82B/82 |     | 12/28/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
| Hanford Site           |         | 11/04/99      | 7278-001 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
| C00-005-107            | C00-005 | 11/05/99      | 7278-001 | H      |     | 12/08/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| Method Blank           |         | N911082-05    | 7278-005 | 82B/82 |     | 12/28/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
|                        |         |               | 7278-005 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
|                        | C00-005 |               | 7278-005 | H      |     | 12/08/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| Lab Control Sample     |         | N911082-04    | 7278-004 | 82B/82 |     | 12/28/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
|                        |         |               | 7278-004 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
|                        | C00-005 |               | 7278-004 | H      |     | 12/08/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| Duplicate (N911082-01) |         | N911082-06    | 7278-006 | 82B/82 |     | 12/30/99 | 01/31/00 | MCM | Gross Beta in Water  |  |  |  |  |
| Hanford Site           |         | 11/04/99      | 7278-006 | 88A/88 |     | 12/21/99 | 01/31/00 | MCM | Gross Alpha in Water |  |  |  |  |
|                        | C00-005 | 11/05/99      | 7278-006 | H      |     | 12/10/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| Spike (N911082-02)     |         | N911082-07    | 7278-007 | H      |     | 12/09/99 | 01/31/00 | MCM | Tritium in Water     |  |  |  |  |
| Hanford Site           |         | 11/04/99      |          |        |     |          |          |     |                      |  |  |  |  |
|                        | C00-005 | 11/05/99      |          |        |     |          |          |     |                      |  |  |  |  |

## COUNTS OF TESTS BY SAMPLE TYPE

| TEST   | SAF No  | METHOD               | REFERENCE | CLIENT | MORE | RE | BLANK | LCS | DUP | SPIKE | TOTAL |
|--------|---------|----------------------|-----------|--------|------|----|-------|-----|-----|-------|-------|
| 82B/82 | C00-005 | Gross Beta in Water  | EPA900.0  | 3      |      |    | 1     | 1   | 1   |       | 6     |
| 88A/88 | C00-005 | Gross Alpha in Water | EPA900.0  | 3      |      |    | 1     | 1   | 1   |       | 6     |
| H      | C00-005 | Tritium in Water     | EPA906.0  | 3      |      |    | 1     | 1   | 1   | 1     | 7     |
| TOTALS |         |                      |           | 9      |      |    | 3     | 3   | 3   | 1     | 19    |

WORK SUMMARY

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CWSVersion 3.06Report date 01/31/00

N911082-05

### Method Blank

|                                   |                                      |                  |
|-----------------------------------|--------------------------------------|------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>        | SDG <u>H0617</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>       |                  |
| Lab sample id <u>N911082-05</u>   | Client sample id <u>Method Blank</u> |                  |
| Dept sample id <u>7278-005</u>    | Material/Matrix <u></u>              | <u>WATER</u>     |
|                                   | SAF No <u>C00-005</u>                |                  |

| ANALYTE     | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|-------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | -0.243          | 0.49              | 1.3          |              | U               | 88A  |
| Gross Beta  | 12587-47-2 | -0.840          | 1.7               | 3.1          |              | U               | 82B  |
| Tritium     | 10028-17-8 | -30.5           | 120               | 200          | 400          | U               | H    |

100-HR3-IAM (1&2) GW Mon., Nov. 1999

QC-BLANK 32675

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-DS  
Version 3.06  
Report date 01/31/00

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

N911082-04

Lab Control Sample

## LAB CONTROL SAMPLE

|                                   |                                            |                  |
|-----------------------------------|--------------------------------------------|------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>              | SDG <u>H0617</u> |
| Contact <u>Melissa C. Mannion</u> | Case no <u>TRB-SBB-207925</u>              |                  |
| Lab sample id <u>N911082-04</u>   | Client sample id <u>Lab Control Sample</u> |                  |
| Dept sample id <u>7278-004</u>    | Material/Matrix <u>WATER</u>               |                  |
|                                   | SAF No <u>C00-005</u>                      |                  |

| ANALYTE     | RESULT<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST | ADDED<br>pCi/L | 2 $\sigma$ ERR<br>pCi/L | REC<br>% | 3 $\sigma$ LMTS<br>(TOTAL) | PROTOCOL<br>LIMITS |
|-------------|-----------------|---------------------------|--------------|--------------|-----------------|------|----------------|-------------------------|----------|----------------------------|--------------------|
| Gross Alpha | 81.4            | 6.3                       | 1.4          |              |                 | 88A  | 100            | 4.0                     | 81       | 73-127                     |                    |
| Gross Beta  | 111             | 5.4                       | 3.7          |              |                 | 82B  | 112            | 4.5                     | 99       | 76-124                     |                    |
| Tritium     | 8450            | 310                       | 200          | 400          |                 | H    | 8320           | 330                     | 102      | 83-117                     | 80-120             |

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999

QC-LCS 32674

LAB CONTROL SAMPLES

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|                             |
|-----------------------------|
| Lab id <u>TMANC</u>         |
| Protocol <u>Hanford</u>     |
| Version <u>Ver 1.0</u>      |
| Form <u>DVD-LCS</u>         |
| Version <u>3.06</u>         |
| Report date <u>01/31/00</u> |



## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

N911082-06

BOWRB9

## DUPLICATE

|                                   |                                 |                                                  |
|-----------------------------------|---------------------------------|--------------------------------------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>   | SDG <u>H0617</u>                                 |
| Contact <u>Melissa C. Mannion</u> | Case no <u>TRB-SBB-207925</u>   |                                                  |
| DUPLICATE                         | ORIGINAL                        |                                                  |
| Lab sample id <u>N911082-06</u>   | Lab sample id <u>N911082-01</u> | Client sample id <u>BOWRB9</u>                   |
| Dept sample id <u>7278-006</u>    | Dept sample id <u>7278-001</u>  | Location/Matrix <u>Hanford Site</u> <u>WATER</u> |
|                                   | Received <u>11/05/99</u>        | Collected <u>11/04/99 08:35</u>                  |
|                                   |                                 | Custody/SAF No <u>C00-005-107</u> <u>C00-005</u> |

| ANALYTE     | DUPLICATE<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST | ORIGINAL<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | QUALI-<br>FIERS | RPD<br>% | 3 $\sigma$ PROT<br>TOT LIMIT |
|-------------|--------------------|---------------------------|--------------|--------------|-----------------|------|-------------------|---------------------------|--------------|-----------------|----------|------------------------------|
| Gross Alpha | 1.96               | 1.3                       | 1.5          |              |                 | 88A  | 3.28              | 1.5                       | 1.5          |                 | 50       | 122                          |
| Gross Beta  | 23.0               | 2.3                       | 2.5          |              |                 | 82B  | 22.6              | 2.3                       | 2.3          |                 | 2        | 38                           |
| Tritium     | 3800               | 170                       | 150          | 400          |                 | H    | 3780              | 230                       | 200          |                 | 1        | 24                           |

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999

QC-DUP#1 32676

DUPLICATES

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SUMMARY DATA SECTION

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|                             |
|-----------------------------|
| Lab id <u>TMANC</u>         |
| Protocol <u>Hanford</u>     |
| Version <u>Ver 1.0</u>      |
| Form <u>DVD-DUP</u>         |
| Version <u>3.06</u>         |
| Report date <u>01/31/00</u> |

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

N911082-07

BOWR07

## MATRIX SPIKE

|                                   |                                 |                                                  |
|-----------------------------------|---------------------------------|--------------------------------------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>   | <u>SDG H0617</u>                                 |
| Contact <u>Melissa C. Mannion</u> | Case no <u>TRB-SBB-207925</u>   |                                                  |
| MATRIX SPIKE                      | ORIGINAL                        |                                                  |
| Lab sample id <u>N911082-07</u>   | Lab sample id <u>N911082-02</u> | Client sample id <u>BOWR07</u>                   |
| Dept sample id <u>7278-007</u>    | Dept sample id <u>7278-002</u>  | Location/Matrix <u>Hanford Site</u> <u>WATER</u> |
|                                   | Received <u>11/05/99</u>        | Collected <u>11/04/99 09:49</u>                  |
|                                   |                                 | Custody/SAF No <u>C00-005-155</u> <u>C00-005</u> |

| ANALYTE | SPIKE<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS TEST | ADDED<br>pCi/L | 2 $\sigma$ ERR<br>pCi/L | ORIGINAL<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | REC 3 $\sigma$ LMTS<br>% (TOTAL) | PROTOCOL<br>LIMITS |
|---------|----------------|---------------------------|--------------|--------------|----------------------|----------------|-------------------------|-------------------|---------------------------|----------------------------------|--------------------|
| Tritium | 20900          | 460                       | 190          | 400          | H                    | 16100          | 640                     | 6160              | 280                       | 92 78-122                        | 81-121             |

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999

QC-MS#2 32677

MATRIX SPIKES

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SUMMARY DATA SECTION

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|                             |
|-----------------------------|
| Lab id <u>TMANC</u>         |
| Protocol <u>Hanford</u>     |
| Version <u>Ver 1.0</u>      |
| Form <u>DVD-MS</u>          |
| Version <u>3.06</u>         |
| Report date <u>01/31/00</u> |



**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0617**

N911082-02

B0WR07

**DATA SHEET**

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0617</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>N911082-02</u>   | Client sample id <u>B0WR07</u>      |                  |
| Dept sample id <u>7278-002</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>11/05/99</u>          | Collected <u>11/04/99 09:49</u>     |                  |
|                                   | Custody/SAF No <u>C00-005-155</u>   | <u>C00-005</u>   |

| ANALYTE     | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|-------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 1.67            | 1.1               | 1.1          |              |                 | 88A  |
| Gross Beta  | 12587-47-2 | 5.47            | 1.5               | 2.0          |              |                 | 82B  |
| Tritium     | 10028-17-8 | 6160            | 280               | 200          | 400          |                 | H    |

100-HR3-IAM (1&2) GW Mon., Nov. 1999

|                             |
|-----------------------------|
| Lab id <u>TMANC</u>         |
| Protocol <u>Hanford</u>     |
| Version <u>Ver 1.0</u>      |
| Form <u>DVD-DS</u>          |
| Version <u>3.06</u>         |
| Report date <u>01/31/00</u> |

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0617**

N911082-03

B0WR52

**DATA SHEET**

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0617</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>N911082-03</u>   | Client sample id <u>B0WR52</u>      |                  |
| Dept sample id <u>7278-003</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>11/05/99</u>          | Collected <u>11/04/99 09:48</u>     |                  |
|                                   | Custody/SAF No <u>C00-005-111</u>   | <u>C00-005</u>   |

| ANALYTE     | CAS NO     | RESULT<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|-------------|------------|-----------------|---------------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 97.6            | 12                        | 4.5          |              |                 | 88A  |
| Gross Beta  | 12587-47-2 | 593             | 12                        | 4.0          |              |                 | 82B  |
| Tritium     | 10028-17-8 | 2960            | 210                       | 200          | 400          |                 | H    |

100-HR3-IAM (1&2) GW Mon., Nov. 1999

|                             |
|-----------------------------|
| Lab id <u>TMANC</u>         |
| Protocol <u>Hanford</u>     |
| Version <u>Ver 1.0</u>      |
| Form <u>DVD-DS</u>          |
| Version <u>3.06</u>         |
| Report date <u>01/31/00</u> |

## TMA / RICHMOND

SAMPLE DELIVERY GROUP H0617

N911082-01

BOWRB9

## DATA SHEET

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7278</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0617</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>N911082-01</u>   | Client sample id <u>BOWRB9</u>      |                  |
| Dept sample id <u>7278-001</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>11/05/99</u>          | Collected <u>11/04/99 08:35</u>     |                  |
|                                   | Custody/SAF No <u>C00-005-107</u>   | <u>C00-005</u>   |

| ANALYTE     | CAS NO     | RESULT<br>pCi/L | 2 $\sigma$ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|-------------|------------|-----------------|---------------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 3.28            | 1.5                       | 1.5          |              |                 | 88A  |
| Gross Beta  | 12587-47-2 | 22.6            | 2.3                       | 2.3          |              |                 | 82B  |
| Tritium     | 10028-17-8 | 3780            | 230                       | 200          | 400          |                 | H    |

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999



## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

Test 82B Matrix WATERSDG 7278Contact Melissa C. Mannion

## METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG H0617

## RESULTS

| CLIENT SAMPLE ID           | LAB<br>SAMPLE ID | RAW<br>TEST | SUF-<br>FIX | 1: Gross<br>Beta | 2: Sum, Beta<br>Emitters | RESULT RATIO (%)<br>2+1 2σ |
|----------------------------|------------------|-------------|-------------|------------------|--------------------------|----------------------------|
| Preparation batch 6909-048 |                  |             |             |                  |                          |                            |
| BOWR07                     | N911082-02       | 82          | 7278-002    | 5.47             |                          |                            |
| BOWR52                     | N911082-03       | 82          | 7278-003    | 593              |                          |                            |
| BOWRB9                     | N911082-01       | 82          | 7278-001    | 22.6             |                          |                            |
| BLK (QC ID=32675)          | N911082-05       | 82          | 7278-005    | U                |                          |                            |
| LCS (QC ID=32674)          | N911082-04       | 82          | 7278-004    | ok               |                          |                            |
| Duplicate (N911082-01)     | N911082-06       | 82          | 7278-006    | ok               |                          |                            |

Nominal values and limits from method

RDLs (pCi/L)

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999

Average

## METHOD PERFORMANCE

| CLIENT SAMPLE ID                                                                    | LAB<br>SAMPLE ID | RAW<br>TEST | SUF-<br>FIX | MDA<br>pCi/L | ALIQ<br>L | PREP<br>FAC | DILU-<br>TION | RESID<br>mg | EFF<br>% | COUNT<br>min | FWHM<br>keV | DRIFT<br>KeV | DAYS<br>HELD | ANAL-<br>YZED | DETECTOR |
|-------------------------------------------------------------------------------------|------------------|-------------|-------------|--------------|-----------|-------------|---------------|-------------|----------|--------------|-------------|--------------|--------------|---------------|----------|
| Preparation batch 6909-048 2σ prep error 15.0 % Reference Lab Notebook 6909 pg. 048 |                  |             |             |              |           |             |               |             |          |              |             |              |              |               |          |
| BOWR07                                                                              | N911082-02       | 82          |             | 2.0          | 0.300     |             |               | 85          | 100      |              |             |              | 54 12/14/99  | 12/28         | GRB-115  |
| BOWR52                                                                              | N911082-03       | 82          |             | 4.0          | 0.200     |             |               | 174         | 100      |              |             |              | 55 12/14/99  | 12/29         | GRB-116  |
| BOWRB9                                                                              | N911082-01       | 82          |             | 2.3          | 0.300     |             |               | 86          | 100      |              |             |              | 54 12/14/99  | 12/28         | GRB-114  |
| BLK (QC ID=32675)                                                                   | N911082-05       | 82          |             | 3.1          | 0.200     |             |               | 19          | 100      |              |             |              | 12/14/99     | 12/28         | GRB-111  |
| LCS (QC ID=32674)                                                                   | N911082-04       | 82          |             | 3.7          | 0.200     |             |               | 20          | 100      |              |             |              | 12/14/99     | 12/28         | GRB-110  |
| Duplicate (N911082-01)                                                              | N911082-06       | 82          |             | 2.5          | 0.300     |             |               | 85          | 100      |              |             |              | 56 12/14/99  | 12/30         | GRB-112  |

(QC ID=32676)

Nominal values and limits from method

0.200

5-250

100

PROCEDURES REFERENCE EPA900.0

EP-120

Gross Alpha and Gross Beta in Environmental Water,  
rev 2

AVERAGES ± 2 SD

MDA 2.9 ± 1.6

FOR 6 SAMPLES

RESIDUE 78 ± 114

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 14

Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 01/31/00

## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

Test 88A Matrix WATERSDG 7278Contact Melissa C. Mannion

## METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client HanfordContract TRB-SBB-207925Case no SDG H0617

## RESULTS

| CLIENT SAMPLE ID | LAB<br>SAMPLE ID | RAW<br>TEST FIX | SUF-<br>PLANCHET | Gross Alpha |
|------------------|------------------|-----------------|------------------|-------------|
|------------------|------------------|-----------------|------------------|-------------|

Preparation batch 6909-048

|                        |            |    |          |      |
|------------------------|------------|----|----------|------|
| BOWR07                 | N911082-02 | 88 | 7278-002 | 1.67 |
| BOWR52                 | N911082-03 | 88 | 7278-003 | 97.6 |
| BOWRB9                 | N911082-01 | 88 | 7278-001 | 3.28 |
| BLK (QC ID=32675)      | N911082-05 | 88 | 7278-005 | U    |
| LCS (QC ID=32674)      | N911082-04 | 88 | 7278-004 | ok   |
| Duplicate (N911082-01) | N911082-06 | 88 | 7278-006 | ok   |

Nominal values and limits from method RDLs (pCi/L)

100-HR3-IAM (1&amp;2) GW Mon., Nov. 1999

## METHOD PERFORMANCE

| CLIENT SAMPLE ID | LAB<br>SAMPLE ID | RAW<br>TEST FIX | SUF-<br>pCi/L | MDA<br>L | ALIQ<br>FAC | PREP<br>TION | DILU-<br>mg | RESID<br>% | EFF<br>min | COUNT<br>keV | FWHM<br>keV | DRIFT<br>HELD | DAYS<br>PREPARED | ANAL-<br>YZED | DETECTOR |
|------------------|------------------|-----------------|---------------|----------|-------------|--------------|-------------|------------|------------|--------------|-------------|---------------|------------------|---------------|----------|
|------------------|------------------|-----------------|---------------|----------|-------------|--------------|-------------|------------|------------|--------------|-------------|---------------|------------------|---------------|----------|

Preparation batch 6909-048 2σ prep error 20.0 % Reference Lab Notebook 6909 pg. 048

|                                         |            |    |     |       |  |  |     |     |  |  |  |    |          |       |         |
|-----------------------------------------|------------|----|-----|-------|--|--|-----|-----|--|--|--|----|----------|-------|---------|
| BOWR07                                  | N911082-02 | 88 | 1.1 | 0.300 |  |  | 80  | 100 |  |  |  | 47 | 12/14/99 | 12/21 | GRB-114 |
| BOWR52                                  | N911082-03 | 88 | 4.5 | 0.200 |  |  | 176 | 100 |  |  |  | 47 | 12/14/99 | 12/21 | GRB-115 |
| BOWRB9                                  | N911082-01 | 88 | 1.5 | 0.300 |  |  | 85  | 100 |  |  |  | 47 | 12/14/99 | 12/21 | GRB-113 |
| BLK (QC ID=32675)                       | N911082-05 | 88 | 1.3 | 0.200 |  |  | 20  | 100 |  |  |  |    | 12/14/99 | 12/21 | GRB-111 |
| LCS (QC ID=32674)                       | N911082-04 | 88 | 1.4 | 0.200 |  |  | 20  | 100 |  |  |  |    | 12/14/99 | 12/21 | GRB-110 |
| Duplicate (N911082-01)<br>(QC ID=32676) | N911082-06 | 88 | 1.5 | 0.300 |  |  | 88  | 100 |  |  |  | 47 | 12/14/99 | 12/21 | GRB-112 |

Nominal values and limits from method 0.200 5-250 100

PROCEDURES REFERENCE EPA900.0  
EP-120 Gross Alpha and Gross Beta in Environmental Water,  
rev 2

AVERAGES ± 2 SD MDA 1.9 ± 2.6  
FOR 6 SAMPLES RESIDUE 78 ± 115

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

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Lab id TMANCProtocol HanfordVersion Ver 1.0Form DVD-CMSVersion 3.06Report date 01/31/00



## TMA/RICHMOND

SAMPLE DELIVERY GROUP H0617

Test H Matrix WATER  
SDG 7278  
Contact Melissa C. Mannion

## METHOD SUMMARY

TRITIUM IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG H0617

## RESULTS

| CLIENT SAMPLE ID           | LAB<br>SAMPLE ID | RAW SUP-<br>TEST FIX | PLANCHET | Tritium |
|----------------------------|------------------|----------------------|----------|---------|
| Preparation batch 6909-048 |                  |                      |          |         |
| BOWR07                     | N911082-02       |                      | 7278-002 | 6160    |
| BOWR52                     | N911082-03       |                      | 7278-003 | 2960    |
| BOWRB9                     | N911082-01       |                      | 7278-001 | 3780    |
| BLK (QC ID=32675)          | N911082-05       |                      | 7278-005 | U       |
| LCS (QC ID=32674)          | N911082-04       |                      | 7278-004 | ok      |
| Duplicate (N911082-01)     | N911082-06       |                      | 7278-006 | ok      |
| Spike (N911082-02)         | N911082-07       |                      | 7278-007 | ok      |

Nominal values and limits from method RDLs (pCi/L) 400  
100-HR3-IAM (1&2) GW Mon., Nov. 1999

## METHOD PERFORMANCE

| CLIENT SAMPLE ID                                                                    | LAB<br>SAMPLE ID | RAW SUP-<br>TEST FIX | MDA<br>pCi/L | ALIQ<br>L | PREP<br>FAC | DILU-<br>TION | YIELD<br>% | EFF<br>% | COUNT<br>min, | FWHM<br>keV | DRIFT<br>KeV | DAYS<br>HELD | ANAL-<br>PREPARED | YZED  | DETECTOR |
|-------------------------------------------------------------------------------------|------------------|----------------------|--------------|-----------|-------------|---------------|------------|----------|---------------|-------------|--------------|--------------|-------------------|-------|----------|
| Preparation batch 6909-048 2σ prep error 10.0 % Reference Lab Notebook 6909 pg. 048 |                  |                      |              |           |             |               |            |          |               |             |              |              |                   |       |          |
| BOWR07                                                                              | N911082-02       |                      | 200          | 0.0100    |             |               | 100        | 100      |               |             |              | 34           | 12/08/99          | 12/08 | LSC-005  |
| BOWR52                                                                              | N911082-03       |                      | 200          | 0.0100    |             |               | 100        | 100      |               |             |              | 34           | 12/08/99          | 12/08 | LSC-005  |
| BOWRB9                                                                              | N911082-01       |                      | 200          | 0.0100    |             |               | 100        | 100      |               |             |              | 34           | 12/08/99          | 12/08 | LSC-005  |
| BLK (QC ID=32675)                                                                   | N911082-05       |                      | 200          | 0.0100    |             |               | 100        | 100      |               |             |              |              | 12/08/99          | 12/08 | LSC-005  |
| LCS (QC ID=32674)                                                                   | N911082-04       |                      | 200          | 0.0100    |             |               | 100        | 100      |               |             |              |              | 12/08/99          | 12/08 | LSC-005  |
| Duplicate (N911082-01)                                                              | N911082-06       |                      | 150          | 0.0100    |             |               | 100        | 120      |               |             |              | 36           | 12/08/99          | 12/10 | LSC-007  |
| (QC ID=32676)                                                                       |                  |                      |              |           |             |               |            |          |               |             |              |              |                   |       |          |
| Spike (N911082-02)                                                                  | N911082-07       |                      | 190          | 0.0100    |             |               | 100        | 100      |               |             |              | 35           | 12/08/99          | 12/09 | LSC-005  |
| (QC ID=32677)                                                                       |                  |                      |              |           |             |               |            |          |               |             |              |              |                   |       |          |
| Nominal values and limits from method                                               |                  |                      | 400          | 0.0100    |             |               |            |          | 25            |             |              | 180          |                   |       |          |

PROCEDURES REFERENCE EPA906.0  
EP-210 Tritium in Water by Distillation, rev 0

AVERAGES ± 2 SD MDA 190 ± 37  
FOR 7 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 01/31/00



|             |                                                 |                    |
|-------------|-------------------------------------------------|--------------------|
| PNNL        | <b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> | C.O.C. #           |
|             |                                                 | <b>C00-005-107</b> |
| Page 1 of 1 |                                                 |                    |

|                                                                             |                                            |                                                                 |
|-----------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------|
| Collector<br><b>D.R. BREWINGTON</b>                                         | Contact/Requester<br><b>JH KESSNER</b>     | Telephone No. <b>MSIN FAX</b><br><b>(509) 375-4688</b>          |
| SAF No.<br><b>C00-005</b>                                                   | Sampling Origin<br><b>HANFORD SITE</b>     | Purchase Order/Charge Code                                      |
| Project Title<br><b>100-HR3-IAM (1 &amp; 2) GW MONITORING NOVEMBER 1999</b> | Logbook No.<br><b>WIN-SIML-1729</b>        | Ice Chest No. <b>6W5118</b> Temp. <b>4 °C</b>                   |
| Shipped To (Lab)<br><b>TMA/RECRA</b>                                        | Method of Shipment<br><b>GOVT. VEHICLE</b> | Bill of Lading/Air Bill No.<br><b>4235 79531436 per 11/4/99</b> |
| Protocol<br><b>CERCLA</b>                                                   | Data Turnaround<br><b>45 Days</b>          | Offsite Property No. <b>W 0000024 24</b>                        |

|                                                 |                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>POSSIBLE SAMPLE HAZARDS/REMARKS</b><br>** ** | <b>SPECIAL INSTRUCTIONS</b> Hold Time    Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/><br>SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI<br>FAX COPIES OF QES & TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487). |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Sample No.   | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|--------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| ✓ B0WRB8 (F) |        | W | 11-4-99 | 0835 | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WRB9     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WRB9     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| ✓ B0WRB9     |        | W |         |      | 1x20-mL P         | Activity Scan $\neq$                                              | None          |
| ✓ B0WRB9     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha A,B                                                   | HNO3 to pH <2 |
| ✓ B0WRB9     |        | W |         |      | 2x1000-mL G/P     | Gross Beta C,D                                                    | HNO3 to pH <2 |
| ✓ B0WRB9     |        | W |         |      | 1x250-mL P        | Tritium - H3 E                                                    | None          |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |

|                                                                                                                                                                                                                                                                                                             |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                          |                                 |                                                                                |                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------|
| Relinquished By <small>Print</small> <b>D.R. Brewington</b> <small>Sign</small> <i>D.R. Brewington</i> <small>Date/Time</small> <b>11/4/99 1400</b>                                                                                                                                                         | Received By <small>Print</small> <b>Fed Ex</b> <small>Sign</small> <i>Fed Ex</i> <small>Date/Time</small> <b>11-4-99</b> | <b>Matrix *</b><br>S = Soil                      DS = Drum Solid<br>SE = Sediment            DI. = Drum Liquid<br>SO = Solid                    T = Tissue<br>SL = Sludge                WI = Wine<br>W = Water                  L = Liquid<br>O = Oil                        V = Vegetation<br>A = Air                        X = Other |                                 |                                                                                |                                                          |
| Relinquished By <small>Date/Time</small> <b>FedEx 11-5-99 10:00</b>                                                                                                                                                                                                                                         | Received By <small>Date/Time</small> <b>TNU M. Goldenberg 11-5-99 10:00</b>                                              |                                                                                                                                                                                                                                                                                                                                          |                                 |                                                                                |                                                          |
| Relinquished By <small>Date/Time</small>                                                                                                                                                                                                                                                                    | Received By <small>Date/Time</small>                                                                                     |                                                                                                                                                                                                                                                                                                                                          |                                 |                                                                                |                                                          |
| Relinquished By <small>Date/Time</small>                                                                                                                                                                                                                                                                    | Received By <small>Date/Time</small>                                                                                     |                                                                                                                                                                                                                                                                                                                                          |                                 |                                                                                |                                                          |
| <table style="width:100%;"> <tr> <td style="width:33%;"><b>FINAL SAMPLE DISPOSITION</b></td> <td style="width:33%;">Disposal Method (e.g., Return to customer, per lab procedure, used in process)</td> <td style="width:34%;">Disposed By <span style="float: right;">Date/Time</span></td> </tr> </table> |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                          | <b>FINAL SAMPLE DISPOSITION</b> | Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By <span style="float: right;">Date/Time</span> |
| <b>FINAL SAMPLE DISPOSITION</b>                                                                                                                                                                                                                                                                             | Disposal Method (e.g., Return to customer, per lab procedure, used in process)                                           | Disposed By <span style="float: right;">Date/Time</span>                                                                                                                                                                                                                                                                                 |                                 |                                                                                |                                                          |



PNNL

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-005-155

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|                                                                              |                                            |                                                  |                    |
|------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------|
| Collector<br><b>K. Hulse</b>                                                 | Contact/Requester<br><b>JH KESSNER</b>     | Telephone No.<br><b>(509) 375-4688</b>           | MSIN<br><b>FAX</b> |
| SAF No.<br><b>C00-005</b>                                                    | Sampling Origin<br><b>HANFORD SITE</b>     | Purchase Order/Charge Code                       |                    |
| Project Title<br><b>100-HR3-IAM (1 &amp; 2) GW MONITORING. NOVEMBER 1999</b> | Logbook No.<br><b>W/W-SML- H30</b>         | Ice Chest No.                                    | Temp. <b>40C</b>   |
| Shipped To (Lab)<br><b>TMA/RECRA</b>                                         | Method of Shipment<br><b>GOVT. VEHICLE</b> | Bill of Lading/Air Bill No. <b>42357953 1436</b> |                    |
| Protocol<br><b>CERCLA</b>                                                    | Data Turnaround<br><b>45 Days</b>          | Offsite Property No. <b>W0000024</b>             |                    |

## POSSIBLE SAMPLE HAZARDS/REMARKS

## SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI  
FAX COPIES OF QES & TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No.   | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|--------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| ✓ B0WR06 (F) |        | W | 11/4/99 | 0947 | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| ✓ B0WR07     |        | W |         |      | 1x20-mL P         | Activity Scan <b>#</b>                                            | None          |
| ✓ B0WR07     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha <b>A, B</b>                                           | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 2x1000-mL G/P     | Gross Beta <b>C, D</b>                                            | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x250-mL P        | Tritium - H3 <b>E</b>                                             | None          |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |

|                                    |                          |                            |                                   |                                          |                        |                            |                                   |                                                                                                                                                                                                                                           |
|------------------------------------|--------------------------|----------------------------|-----------------------------------|------------------------------------------|------------------------|----------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br><b>KB Hulse</b> | Print<br><b>KB Hulse</b> | Sign<br><b>[Signature]</b> | Date/Time<br><b>NOV 04 1999</b>   | Received By<br><b>Fed Ex</b>             | Print<br><b>Fed Ex</b> | Sign<br><b>[Signature]</b> | Date/Time<br><b>11-5-99</b>       | <b>Matrix *</b><br>S = Soil      DS = Drum Solid<br>SE = Sediment      DL = Drum Liquid<br>SO = Solid      T = Tissue<br>SL = Sludge      WI = Wine<br>W = Water      L = Liquid<br>O = Oil      V = Vegetation<br>A = Air      X = Other |
| Relinquished By<br><b>Fed Ex</b>   |                          |                            | Date/Time<br><b>11-5-99 10:00</b> | Received By<br><b>TNU M. Goldensberg</b> |                        |                            | Date/Time<br><b>11-5-99 10:00</b> |                                                                                                                                                                                                                                           |
| Relinquished By                    |                          |                            | Date/Time                         | Received By                              |                        |                            | Date/Time                         |                                                                                                                                                                                                                                           |
| Relinquished By                    |                          |                            | Date/Time                         | Received By                              |                        |                            | Date/Time                         |                                                                                                                                                                                                                                           |

## 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. #

C00-005-111

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|                                                                  |                                     |                                              |              |
|------------------------------------------------------------------|-------------------------------------|----------------------------------------------|--------------|
| Collector<br>D.R. BREWINGTON                                     | Contact/Requester<br>JH KESSNER     | Telephone No.<br>(509) 375-4688              | MSIN<br>FAX  |
| SAF No.<br>C00-005                                               | Sampling Origin<br>HANFORD SITE     | Purchase Order/Charge Code                   |              |
| Project Title<br>100-HR3-IAM (1 & 2) GW MONITORING NOVEMBER 1999 | Logbook No.<br>WMD-517L-1129        | Ice Chest No.<br>GW5119                      | Temp.<br>4°C |
| Shipped To (Lab)<br>TMA/RECRA                                    | Method of Shipment<br>GOVT. VEHICLE | Bill of Lading/Air Bill No.<br>4235 79531436 |              |
| Protocol<br>CERCLA                                               | Data Turnaround<br>45 Days          | Offsite Property No.<br>W0000024             |              |

## POSSIBLE SAMPLE HAZARDS/REMARKS

\*\* \*\*

## SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption:

Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

FAX COPIES OF QES &amp; TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No. | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| B0WR51 (F) |        | W | 11-4-99 | 0948 | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| B0WR52     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |

|                                    |                          |                                                                                |                            |                                  |                            |                                |                            |                                                                                                                                                                                                        |
|------------------------------------|--------------------------|--------------------------------------------------------------------------------|----------------------------|----------------------------------|----------------------------|--------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br>D.R. BREWINGTON | Print<br>D.R. Brewington | Signature<br>D.R. Brewington                                                   | Date/Time<br>11/4/99 14:00 | Received By<br>Fed Ex            | Print<br>Fed Ex            | Signature<br>Fed Ex            | Date/Time<br>11-4-99       | <b>Matrix *</b><br>S = Soil DS = Drum Solid<br>SE = Sediment DL = Drum Liquid<br>SO = Solid T = Tissue<br>SL = Sludge W1 = Wine<br>W = Water L = Liquid<br>O = Oil V = Vegetation<br>A = Air X = Other |
| Relinquished By<br>Fed Ex          | Print<br>Fed Ex          | Signature<br>Fed Ex                                                            | Date/Time<br>11-5-99 10:00 | Received By<br>TNU M. Goldenberg | Print<br>TNU M. Goldenberg | Signature<br>TNU M. Goldenberg | Date/Time<br>11-5-99 10:00 |                                                                                                                                                                                                        |
| Relinquished By                    | Print                    | Signature                                                                      | Date/Time                  | Received By                      | Print                      | Signature                      | Date/Time                  |                                                                                                                                                                                                        |
| Relinquished By                    | Print                    | Signature                                                                      | Date/Time                  | Received By                      | Print                      | Signature                      | Date/Time                  |                                                                                                                                                                                                        |
| <b>FINAL SAMPLE DISPOSITION</b>    |                          | Disposal Method (e.g., Return to customer, per lab procedure, used in process) |                            |                                  |                            | Disposed By                    |                            | Date/Time                                                                                                                                                                                              |



# Thermo NUtech - Richmond

## SAMPLE RECEIPT CHECKLIST

### SAMPLE RECEIPT

Client: Beehnel Hanford Inc Date/Time received 11-5-99 10:00  
 CoC No. C00-005-107, 111, 155  
 Container I.D. No. 6 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: 21
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 \_\_\_\_\_
14. Received by M. Goldenberg Date: 11-5-99 Time: 10:00

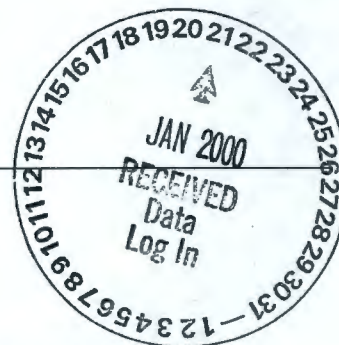
### LOGIN

TNU W.O. No. \_\_\_\_\_ Group No. \_\_\_\_\_ Client W.O. No. \_\_\_\_\_

### PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name \_\_\_\_\_ Date/time \_\_\_\_\_

**Recra LabNet Philadelphia  
Analytical Report**

**Client :** TNU-HANFORD C00-005  
**RFW# :** 9911L679  
**SDG/SAF# :** H0617/C00-005

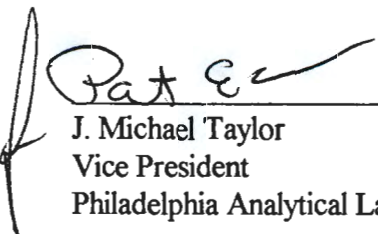
**W.O.# :** 10985-001-001-9999-00  
**Date Received:** 11-10-99

**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).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision 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 25 pages.

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.

  
\_\_\_\_\_  
J. Michael Taylor  
Vice President  
Philadelphia Analytical Laboratory  
mld/ml1-679

1-18-00  
Date





# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9911L679

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<br>OSWR    | USATHAMA       |
|-------------|------------------------------------------------------------------------|-----------------------------------------------------------|-----------------|----------------|----------------|
| Aluminum    | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Antimony    | <input checked="" type="checkbox"/> 6010B <u>  </u> 7041 <sup>5</sup>  | <u>  </u> 200.7 <u>  </u> 204.2                           |                 |                | <u>  </u> 99   |
| Arsenic     | <u>  </u> 6010B <u>  </u> 7060A <sup>5</sup>                           | <u>  </u> 200.7 <u>  </u> 206.2                           | <u>  </u> 3113B |                | <u>  </u> 99   |
| Barium      | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Beryllium   | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Bismuth     | <u>  </u> 6010B <sup>1</sup>                                           | <u>  </u> 200.7 <sup>1</sup>                              |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Boron       | <u>  </u> 6010B                                                        | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Cadmium     | <input checked="" type="checkbox"/> 6010B <u>  </u> 7131A <sup>5</sup> | <u>  </u> 200.7 <u>  </u> 213.2                           |                 |                | <u>  </u> 99   |
| Calcium     | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Chromium    | <input checked="" type="checkbox"/> 6010B <u>  </u> 7191 <sup>5</sup>  | <u>  </u> 200.7 <u>  </u> 218.2                           |                 |                | <u>  </u> SS17 |
| Cobalt      | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Copper      | <input checked="" type="checkbox"/> 6010B <u>  </u> 7211 <sup>5</sup>  | <u>  </u> 200.7 <u>  </u> 220.2                           |                 |                | <u>  </u> 99   |
| Iron        | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Lead        | <input checked="" type="checkbox"/> 6010B <u>  </u> 7421 <sup>5</sup>  | <u>  </u> 200.7 <u>  </u> 239.2                           | <u>  </u> 3113B |                | <u>  </u> 99   |
| Lithium     | <u>  </u> 6010B <u>  </u> 7430 <sup>4</sup>                            | <u>  </u> 200.7                                           |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Magnesium   | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Manganese   | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Mercury     | <u>  </u> 7470A <sup>3</sup> <u>  </u> 7471A <sup>3</sup>              | <u>  </u> 245.1 <sup>2</sup> <u>  </u> 245.5 <sup>2</sup> |                 |                | <u>  </u> 99   |
| Molybdenum  | <u>  </u> 6010B                                                        | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Nickel      | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Potassium   | <input checked="" type="checkbox"/> 6010B <u>  </u> 7610 <sup>4</sup>  | <u>  </u> 200.7 <u>  </u> 258.1 <sup>4</sup>              |                 |                | <u>  </u> 99   |
| Rare Earths | <u>  </u> 6010B <sup>1</sup>                                           | <u>  </u> 200.7 <sup>1</sup>                              |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Selenium    | <u>  </u> 6010B <u>  </u> 7740 <sup>5</sup>                            | <u>  </u> 200.7 <u>  </u> 270.2                           | <u>  </u> 3113B |                | <u>  </u> 99   |
| Silicon     | <u>  </u> 6010B <sup>1</sup>                                           | <u>  </u> 200.7                                           |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Silica      | <u>  </u> 6010B                                                        | <u>  </u> 200.7                                           |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Silver      | <input checked="" type="checkbox"/> 6010B <u>  </u> 7761 <sup>5</sup>  | <u>  </u> 200.7 <u>  </u> 272.2                           |                 |                | <u>  </u> 99   |
| Sodium      | <input checked="" type="checkbox"/> 6010B <u>  </u> 7770 <sup>4</sup>  | <u>  </u> 200.7 <u>  </u> 273.1 <sup>4</sup>              |                 |                | <u>  </u> 99   |
| Strontium   | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Thallium    | <u>  </u> 6010B <u>  </u> 7841 <sup>5</sup>                            | <u>  </u> 200.7 <u>  </u> 279.2 <u>  </u> 200.9           |                 |                | <u>  </u> 99   |
| Tin         | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Titanium    | <u>  </u> 6010B                                                        | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Uranium     | <u>  </u> 6010B <sup>1</sup>                                           | <u>  </u> 200.7 <sup>1</sup>                              |                 | <u>  </u> 1620 | <u>  </u> 99   |
| Vanadium    | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Zinc        | <input checked="" type="checkbox"/> 6010B                              | <u>  </u> 200.7                                           |                 |                | <u>  </u> 99   |
| Zirconium   | <u>  </u> 6010B <sup>1</sup>                                           | <u>  </u> 200.7 <sup>1</sup>                              |                 | <u>  </u> 1620 | <u>  </u> 99   |

Other: \_\_\_\_\_

Method: \_\_\_\_\_

## 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 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| =====  | =====   | =====            | =====  | ===== | =====              | =====              |
| -001   | B0WR06  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 31.4   | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 56.3   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 55700  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 89.7   | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 1.3    | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 99.7   | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 4750   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 12900  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 3.8    | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 22100  | UG/L  | 4.8                | 1.0                |
|        |         | Nickel, Total    | 1.0 u  | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 3.2    | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 272    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.0    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 6.1    | UG/L  | 0.50               | 1.0                |



Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| =====  | =====   | =====            | =====  | ===== | =====              | =====              |
| -002   | B0WR07  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 41.9   | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 56.4   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 55500  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 89.9   | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 0.59   | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 246    | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 4710   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 12800  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 6.4    | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 21800  | UG/L  | 4.8                | 1.0                |
|        |         | Nickel, Total    | 1.1    | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 272    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.0    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 2.9    | UG/L  | 0.50               | 1.0                |

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| -----  | -----   | -----            | -----  | ----- | -----              | -----              |
| -003   | BOWRB8  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 138    | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 44.9   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 73000  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 84.2   | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 0.81   | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 46.6   | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 5440   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 12500  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 0.28   | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 15100  | UG/L  | 4.8                | 1.0                |
|        |         | Nickel, Total    | 1.1    | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 346    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.6    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 1.9    | UG/L  | 0.50               | 1.0                |

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| -----  | -----   | -----            | -----  | ----- | -----              | -----              |
| -004   | BOWRB9  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 68.1   | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 41.2   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 65900  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 78.6   | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 2.1    | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 70.6   | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 4760   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 11300  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 0.84   | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 13800  | UG/L  | 4.8                | 1.0                |
|        |         | Nickel, Total    | 2.3    | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 311    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.0    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 5.2    | UG/L  | 0.50               | 1.0                |



Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/18/00

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| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| -----  | -----   | -----            | -----  | ----- | -----              | -----              |
| -005   | BOWR51  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 51.0   | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 69.8   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 64200  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 142    | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 3.3    | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 42.1   | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 8980   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 11100  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 4.5    | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 169000 | UG/L  | 24.0               | 5.0                |
|        |         | Nickel, Total    | 17.9   | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 333    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.1    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 1.4    | UG/L  | 0.50               | 1.0                |

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|------------------|--------|-------|--------------------|--------------------|
| -----  | -----   | -----            | -----  | ----- | -----              | -----              |
| -006   | B0WR52  | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |         | Aluminum, Total  | 58.1   | UG/L  | 10.1               | 1.0                |
|        |         | Barium, Total    | 69.9   | UG/L  | 0.20               | 1.0                |
|        |         | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |         | Calcium, Total   | 63700  | UG/L  | 8.6                | 1.0                |
|        |         | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |         | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |         | Chromium, Total  | 151    | UG/L  | 0.70               | 1.0                |
|        |         | Copper, Total    | 3.7    | UG/L  | 0.50               | 1.0                |
|        |         | Iron, Total      | 429    | UG/L  | 13.6               | 1.0                |
|        |         | Potassium, Total | 8800   | UG/L  | 17.8               | 1.0                |
|        |         | Magnesium, Total | 11000  | UG/L  | 6.3                | 1.0                |
|        |         | Manganese, Total | 12.5   | UG/L  | 0.20               | 1.0                |
|        |         | Sodium, Total    | 166000 | UG/L  | 24.0               | 5.0                |
|        |         | Nickel, Total    | 20.3   | UG/L  | 1.0                | 1.0                |
|        |         | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |         | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |         | Strontium, Total | 330    | UG/L  | 0.10               | 1.0                |
|        |         | Vanadium, Total  | 4.0    | UG/L  | 0.60               | 1.0                |
|        |         | Zinc, Total      | 0.92   | UG/L  | 0.50               | 1.0                |

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID     | ANALYTE          | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|-------------|------------------|--------|-------|--------------------|--------------------|
| *****  | *****       | *****            | *****  | ***** | *****              | *****              |
| BLANK1 | 99L0875-MB1 | Silver, Total    | 0.80 u | UG/L  | 0.80               | 1.0                |
|        |             | Aluminum, Total  | 17.6   | UG/L  | 10.1               | 1.0                |
|        |             | Barium, Total    | 0.77   | UG/L  | 0.20               | 1.0                |
|        |             | Beryllium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |             | Calcium, Total   | 13.2   | UG/L  | 8.6                | 1.0                |
|        |             | Cadmium, Total   | 0.40 u | UG/L  | 0.40               | 1.0                |
|        |             | Cobalt, Total    | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |             | Chromium, Total  | 0.70 u | UG/L  | 0.70               | 1.0                |
|        |             | Copper, Total    | 0.50 u | UG/L  | 0.50               | 1.0                |
|        |             | Iron, Total      | 13.6 u | UG/L  | 13.6               | 1.0                |
|        |             | Potassium, Total | 17.8 u | UG/L  | 17.8               | 1.0                |
|        |             | Magnesium, Total | 6.3 u  | UG/L  | 6.3                | 1.0                |
|        |             | Manganese, Total | 0.20 u | UG/L  | 0.20               | 1.0                |
|        |             | Sodium, Total    | 46.7   | UG/L  | 4.8                | 1.0                |
|        |             | Nickel, Total    | 1.0 u  | UG/L  | 1.0                | 1.0                |
|        |             | Lead, Total      | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |             | Antimony, Total  | 2.1 u  | UG/L  | 2.1                | 1.0                |
|        |             | Tin, Total       | 2.6 u  | UG/L  | 2.6                | 1.0                |
|        |             | Strontium, Total | 0.10 u | UG/L  | 0.10               | 1.0                |
|        |             | Vanadium, Total  | 0.60 u | UG/L  | 0.60               | 1.0                |
|        |             | Zinc, Total      | 0.85   | UG/L  | 0.50               | 1.0                |



Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE          | SPIKED<br>SAMPLE | INITIAL<br>RESULT | SPIKED<br>AMOUNT | %RECOV | DILUTION<br>FACTOR (SPK) |
|--------|---------|------------------|------------------|-------------------|------------------|--------|--------------------------|
| -----  | -----   | -----            | -----            | -----             | -----            | -----  | -----                    |
| -001   | B0WR06  | Silver, Total    | 49.0             | 0.80u             | 50.0             | 98.0   | 1.0                      |
|        |         | Aluminum, Total  | 2010             | 31.4              | 2000             | 99.1   | 1.0                      |
|        |         | Barium, Total    | 2000             | 56.3              | 2000             | 97.2   | 1.0                      |
|        |         | Beryllium, Total | 48.9             | 0.10u             | 50.0             | 97.8   | 1.0                      |
|        |         | Calcium, Total   | 78700            | 55700             | 25000            | 91.7   | 1.0                      |
|        |         | Cadmium, Total   | 47.6             | 0.40u             | 50.0             | 95.2   | 1.0                      |
|        |         | Cobalt, Total    | 479              | 0.70u             | 500              | 95.8   | 1.0                      |
|        |         | Chromium, Total  | 282              | 89.7              | 200              | 96.4   | 1.0                      |
|        |         | Copper, Total    | 244              | 1.3               | 250              | 97.2   | 1.0                      |
|        |         | Iron, Total      | 1080             | 99.7              | 1000             | 98.4   | 1.0                      |
|        |         | Potassium, Total | 30900            | 4750              | 25000            | 104.8  | 1.0                      |
|        |         | Magnesium, Total | 36800            | 12900             | 25000            | 95.9   | 1.0                      |
|        |         | Manganese, Total | 502              | 3.8               | 500              | 99.7   | 1.0                      |
|        |         | Sodium, Total    | 45000            | 22100             | 25000            | 91.6   | 1.0                      |
|        |         | Nickel, Total    | 473              | 1.0 u             | 500              | 94.5   | 1.0                      |
|        |         | Lead, Total      | 481              | 3.2               | 500              | 95.6   | 1.0                      |
|        |         | Antimony, Total  | 495              | 2.1 u             | 500              | 99.1   | 1.0                      |
|        |         | Tin, Total       | 986              | 2.6 u             | 1000             | 98.6   | 1.0                      |
|        |         | Strontium, Total | 1240             | 272               | 1000             | 97.2   | 1.0                      |
|        |         | Vanadium, Total  | 500              | 4.0               | 500              | 99.2   | 1.0                      |
|        |         | Zinc, Total      | 474              | 6.1               | 500              | 93.6   | 1.0                      |

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE  | SITE ID | ANALYTE          | INITIAL | REPLICATE RPD |       | DILUTION     |
|---------|---------|------------------|---------|---------------|-------|--------------|
|         |         |                  | RESULT  |               |       | FACTOR (REP) |
| -----   | -----   | -----            | -----   | -----         | ----- | -----        |
| -001REP | B0WR06  | Silver, Total    | 0.80u   | 0.80u         | NC    | 1.0          |
|         |         | Aluminum, Total  | 31.4    | 57.5          | 58.7  | 1.0          |
|         |         | Barium, Total    | 56.3    | 56.7          | 0.71  | 1.0          |
|         |         | Beryllium, Total | 0.10u   | 0.10u         | NC    | 1.0          |
|         |         | Calcium, Total   | 55700   | 56000         | 0.47  | 1.0          |
|         |         | Cadmium, Total   | 0.40u   | 0.40u         | NC    | 1.0          |
|         |         | Cobalt, Total    | 0.70u   | 0.70u         | NC    | 1.0          |
|         |         | Chromium, Total  | 89.7    | 90.4          | 0.78  | 1.0          |
|         |         | Copper, Total    | 1.3     | 0.97          | 29.1  | 1.0          |
|         |         | Iron, Total      | 99.7    | 106           | 5.7   | 1.0          |
|         |         | Potassium, Total | 4750    | 4800          | 1.2   | 1.0          |
|         |         | Magnesium, Total | 12900   | 13000         | 1.1   | 1.0          |
|         |         | Manganese, Total | 3.8     | 3.8           | 0.00  | 1.0          |
|         |         | Sodium, Total    | 22100   | 22300         | 0.90  | 1.0          |
|         |         | Nickel, Total    | 1.0 u   | 1.0 u         | NC    | 1.0          |
|         |         | Lead, Total      | 3.2     | 2.1 u         | NC    | 1.0          |
|         |         | Antimony, Total  | 2.1 u   | 2.1 u         | NC    | 1.0          |
|         |         | Tin, Total       | 2.6 u   | 2.6 u         | NC    | 1.0          |
|         |         | Strontium, Total | 272     | 276           | 1.2   | 1.0          |
|         |         | Vanadium, Total  | 4.0     | 3.9           | 2.5   | 1.0          |
|         |         | Zinc, Total      | 6.1     | 3.5           | 54.2  | 1.0          |

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Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/18/00

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID     | ANALYTE        | SAMPLE | SPIKED<br>AMOUNT | UNITS | %RECOV |
|--------|-------------|----------------|--------|------------------|-------|--------|
| LCS1   | 99L0875-LC1 | Silver, LCS    | 493    | 500              | UG/L  | 98.6   |
|        |             | Aluminum, LCS  | 4880   | 5000             | UG/L  | 97.7   |
|        |             | Barium, LCS    | 4830   | 5000             | UG/L  | 96.6   |
|        |             | Beryllium, LCS | 246    | 250              | UG/L  | 98.4   |
|        |             | Calcium, LCS   | 24600  | 25000            | UG/L  | 98.5   |
|        |             | Cadmium, LCS   | 243    | 250              | UG/L  | 97.0   |
|        |             | Cobalt, LCS    | 2410   | 2500             | UG/L  | 96.5   |
|        |             | Chromium, LCS  | 487    | 500              | UG/L  | 97.4   |
|        |             | Copper, LCS    | 1210   | 1250             | UG/L  | 96.7   |
|        |             | Iron, LCS      | 4890   | 5000             | UG/L  | 97.8   |
|        |             | Potassium, LCS | 24800  | 25000            | UG/L  | 99.4   |
|        |             | Magnesium, LCS | 24300  | 25000            | UG/L  | 97.2   |
|        |             | Manganese, LCS | 751    | 750              | UG/L  | 100.1  |
|        |             | Sodium, LCS    | 24000  | 25000            | UG/L  | 95.9   |
|        |             | Nickel, LCS    | 1920   | 2000             | UG/L  | 96.2   |
|        |             | Lead, LCS      | 2410   | 2500             | UG/L  | 96.6   |
|        |             | Antimony, LCS  | 2930   | 3000             | UG/L  | 97.6   |
|        |             | Tin, LCS       | 4880   | 5000             | UG/L  | 97.6   |
|        |             | Strontium, LCS | 4790   | 5000             | UG/L  | 95.8   |
|        |             | Vanadium, LCS  | 2490   | 2500             | UG/L  | 99.5   |
|        |             | Zinc, LCS      | 963    | 1000             | UG/L  | 96.3   |



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW #   | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| BOWR06              |         |     |         |            |           |          |
| SILVER, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SILVER, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SILVER, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ALUMINUM, TOTAL     | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ALUMINUM, TOTAL     | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ALUMINUM, TOTAL     | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BARIUM, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BARIUM, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BARIUM, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BERYLLIUM, TOTAL    | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BERYLLIUM, TOTAL    | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| BERYLLIUM, TOTAL    | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CALCIUM, TOTAL      | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CALCIUM, TOTAL      | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CALCIUM, TOTAL      | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CADMIUM, TOTAL      | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CADMIUM, TOTAL      | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CADMIUM, TOTAL      | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COBALT, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COBALT, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COBALT, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CHROMIUM, TOTAL     | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CHROMIUM, TOTAL     | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| CHROMIUM, TOTAL     | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COPPER, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COPPER, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COPPER, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| IRON, TOTAL         | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| IRON, TOTAL         | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| IRON, TOTAL         | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| POTASSIUM, TOTAL    | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| POTASSIUM, TOTAL    | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| POTASSIUM, TOTAL    | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MAGNESIUM, TOTAL    | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MAGNESIUM, TOTAL    | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW #   | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| MAGNESIUM, TOTAL    | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL    | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL    | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL    | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| NICKEL, TOTAL       | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| NICKEL, TOTAL       | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| NICKEL, TOTAL       | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| LEAD, TOTAL         | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| LEAD, TOTAL         | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| LEAD, TOTAL         | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL     | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL     | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL     | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| TIN, TOTAL          | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| TIN, TOTAL          | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| TIN, TOTAL          | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL    | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL    | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL    | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| VANADIUM, TOTAL     | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| VANADIUM, TOTAL     | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| VANADIUM, TOTAL     | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | 001     | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | 001 REP | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | 001 MS  | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |

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|                  |     |   |         |          |          |          |
|------------------|-----|---|---------|----------|----------|----------|
| SILVER, TOTAL    | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ALUMINUM, TOTAL  | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BARIUM, TOTAL    | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BERYLLIUM, TOTAL | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CALCIUM, TOTAL   | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CADMIUM, TOTAL   | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COBALT, TOTAL    | 002 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|---------|------------|-----------|----------|
| CHROMIUM, TOTAL     | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| COPPER, TOTAL       | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| IRON, TOTAL         | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| POTASSIUM, TOTAL    | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MAGNESIUM, TOTAL    | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL    | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL       | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| NICKEL, TOTAL       | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| LEAD, TOTAL         | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL     | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| TIN, TOTAL          | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL    | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| VANADIUM, TOTAL     | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | 002   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |

B0WRB8

|                  |     |   |         |          |          |          |
|------------------|-----|---|---------|----------|----------|----------|
| SILVER, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ALUMINUM, TOTAL  | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BARIUM, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BERYLLIUM, TOTAL | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CALCIUM, TOTAL   | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CADMIUM, TOTAL   | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COBALT, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CHROMIUM, TOTAL  | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COPPER, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| IRON, TOTAL      | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| POTASSIUM, TOTAL | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MAGNESIUM, TOTAL | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MANGANESE, TOTAL | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| SODIUM, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| NICKEL, TOTAL    | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| LEAD, TOTAL      | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ANTIMONY, TOTAL  | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| TIN, TOTAL       | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| STRONTIUM, TOTAL | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| VANADIUM, TOTAL  | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ZINC, TOTAL      | 003 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|--------|------------|-----------|----------|
|---------------------|-------|-----|--------|------------|-----------|----------|

--B0WRB9

|                  |     |   |         |          |          |          |
|------------------|-----|---|---------|----------|----------|----------|
| SILVER, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ALUMINUM, TOTAL  | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BARIUM, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BERYLLIUM, TOTAL | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CALCIUM, TOTAL   | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CADMIUM, TOTAL   | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COBALT, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CHROMIUM, TOTAL  | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COPPER, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| IRON, TOTAL      | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| POTASSIUM, TOTAL | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MAGNESIUM, TOTAL | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MANGANESE, TOTAL | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| SODIUM, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| NICKEL, TOTAL    | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| LEAD, TOTAL      | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ANTIMONY, TOTAL  | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| TIN, TOTAL       | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| STRONTIUM, TOTAL | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| VANADIUM, TOTAL  | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ZINC, TOTAL      | 004 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |

B0WR51

|                  |     |   |         |          |          |          |
|------------------|-----|---|---------|----------|----------|----------|
| SILVER, TOTAL    | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ALUMINUM, TOTAL  | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BARIUM, TOTAL    | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BERYLLIUM, TOTAL | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CALCIUM, TOTAL   | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CADMIUM, TOTAL   | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COBALT, TOTAL    | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CHROMIUM, TOTAL  | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COPPER, TOTAL    | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| IRON, TOTAL      | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| POTASSIUM, TOTAL | 005 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|---------|------------|-----------|----------|
| MAGNESIUM, TOTAL    | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL    | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL       | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/13/00 |
| NICKEL, TOTAL       | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| LEAD, TOTAL         | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL     | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| TIN, TOTAL          | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL    | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| VANADIUM, TOTAL     | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | 005   | W   | 99L0875 | 11/04/99   | 01/10/00  | 01/12/00 |

BOWR52

|                  |     |   |         |          |          |          |
|------------------|-----|---|---------|----------|----------|----------|
| SILVER, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ALUMINUM, TOTAL  | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BARIUM, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| BERYLLIUM, TOTAL | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CALCIUM, TOTAL   | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CADMIUM, TOTAL   | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COBALT, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| CHROMIUM, TOTAL  | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| COPPER, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| IRON, TOTAL      | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| POTASSIUM, TOTAL | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MAGNESIUM, TOTAL | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| MANGANESE, TOTAL | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| SODIUM, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/13/00 |
| NICKEL, TOTAL    | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| LEAD, TOTAL      | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ANTIMONY, TOTAL  | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| TIN, TOTAL       | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| STRONTIUM, TOTAL | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| VANADIUM, TOTAL  | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |
| ZINC, TOTAL      | 006 | W | 99L0875 | 11/04/99 | 01/10/00 | 01/12/00 |

LAB QC:

|                   |        |   |         |     |          |          |
|-------------------|--------|---|---------|-----|----------|----------|
| SILVER LABORATORY | LC1 BS | W | 99L0875 | N/A | 01/10/00 | 01/12/00 |
|-------------------|--------|---|---------|-----|----------|----------|

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS  | RFW #  | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|--------|-----|---------|------------|-----------|----------|
| SILVER, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ALUMINUM LABORTORY   | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ALUMINUM, TOTAL      | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| BARIUM LABORATORY    | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| BARIUM, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| BERYLLIUM LABORATORY | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| BERYLLIUM, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CALCIUM LABORATORY   | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CALCIUM, TOTAL       | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CADMIUM LABORATORY   | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CADMIUM, TOTAL       | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| COBALT LABORATORY    | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| COBALT, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CHROMIUM LABORATORY  | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| CHROMIUM, TOTAL      | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| COPPER LABORATORY    | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| COPPER, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| IRON LABORATORY      | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| IRON, TOTAL          | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| POTASSIUM LABORATORY | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| POTASSIUM, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| MAGNESIUM LABORATORY | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| MAGNESIUM, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| MANGANESE LABORATORY | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| MANGANESE, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| SODIUM LABORATORY    | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| SODIUM, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| NICKEL LABORATORY    | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| NICKEL, TOTAL        | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| LEAD LABORATORY      | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| LEAD, TOTAL          | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ANTIMONY LABORATORY  | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ANTIMONY, TOTAL      | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| TIN LABORATORY       | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| TIN, TOTAL           | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| STRONTIUM LCS STANDA | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| STRONTIUM, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| VANADIUM LABORATORY  | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW #  | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|---------|------------|-----------|----------|
| VANADIUM, TOTAL     | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ZINC LABORATORY     | LC1 BS | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |
| ZINC, TOTAL         | MB1    | W   | 99L0875 | N/A        | 01/10/00  | 01/12/00 |



**All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

|                                                     |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
|-----------------------------------------------------|--|--|--|-----------------------------------------|--|--|--|--------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------|--|--|--|-----------------------|--|--|--|----------------|--|--|--|
| Client <u>TNU - HANFORD COO-005</u>                 |  |  |  | Refrigerator #                          |  |  |  | 2                                                                              |  |  |  | 2                                                                             |  |  |  |                       |  |  |  |                |  |  |  |
| Est. Final Proj. Sampling Date                      |  |  |  | #/Type Container                        |  |  |  | Liquid                                                                         |  |  |  | 1PL                                                                           |  |  |  | 1PL                   |  |  |  |                |  |  |  |
| Project # <u>10985-001-001-9999-00</u>              |  |  |  | Volume                                  |  |  |  | Liquid                                                                         |  |  |  | 500                                                                           |  |  |  | 500                   |  |  |  |                |  |  |  |
| Project Contact/Phone #                             |  |  |  | Preservatives                           |  |  |  | FAN3                                                                           |  |  |  | —                                                                             |  |  |  |                       |  |  |  |                |  |  |  |
| RECRA Project Manager <u>OT</u>                     |  |  |  | ANALYSES REQUESTED                      |  |  |  | ORGANIC                                                                        |  |  |  | INORG                                                                         |  |  |  | ANIDS                 |  |  |  |                |  |  |  |
| QC <u>Spec</u> Del <u>std</u> TAT <u>30 day</u>     |  |  |  | VOA                                     |  |  |  | BNA                                                                            |  |  |  | Pest/PCB                                                                      |  |  |  | Herb                  |  |  |  |                |  |  |  |
| Date Rec'd <u>11/10/99</u> Date Due <u>12/10/99</u> |  |  |  | Matrix                                  |  |  |  | Date Collected                                                                 |  |  |  | Time Collected                                                                |  |  |  | RECRA LabNet Use Only |  |  |  |                |  |  |  |
| Account #                                           |  |  |  | Matrix QC Chosen (✓)                    |  |  |  | MS                                                                             |  |  |  | MSD                                                                           |  |  |  | Metal                 |  |  |  | CN             |  |  |  |
| MATRIX CODES:                                       |  |  |  | Lab ID                                  |  |  |  | Client ID/Description                                                          |  |  |  | Matrix                                                                        |  |  |  | Date Collected        |  |  |  | Time Collected |  |  |  |
| S - Soil                                            |  |  |  | 001                                     |  |  |  | BOW R06                                                                        |  |  |  | W                                                                             |  |  |  | 11/4/99               |  |  |  | 0949           |  |  |  |
| SE - Sediment                                       |  |  |  | 002                                     |  |  |  | L 7                                                                            |  |  |  | L                                                                             |  |  |  | L                     |  |  |  | L              |  |  |  |
| SO - Solid                                          |  |  |  | 003                                     |  |  |  | BOW RB8                                                                        |  |  |  | L                                                                             |  |  |  | L                     |  |  |  | L              |  |  |  |
| SL - Sludge                                         |  |  |  | 004                                     |  |  |  | L 9                                                                            |  |  |  | L                                                                             |  |  |  | L                     |  |  |  | L              |  |  |  |
| W - Water                                           |  |  |  | 005                                     |  |  |  | BOW R51                                                                        |  |  |  | L                                                                             |  |  |  | L                     |  |  |  | L              |  |  |  |
| O - Oil                                             |  |  |  | 006                                     |  |  |  | L 2                                                                            |  |  |  | L                                                                             |  |  |  | L                     |  |  |  | L              |  |  |  |
| A - Air                                             |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| DB - Drum                                           |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| Solid                                               |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| DL - Drum                                           |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| Liquid                                              |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| L - EP/TCLP                                         |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| Leachate                                            |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| WI - Wipe                                           |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| X - Other                                           |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| F - Fish                                            |  |  |  |                                         |  |  |  |                                                                                |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |
| Special Instructions:                               |  |  |  | DATE/REVISIONS:                         |  |  |  | Met ① = Ag, Al, Ba, Be, Ca, Cd, Cu, Cr,                                        |  |  |  | COC Tape was:                                                                 |  |  |  |                       |  |  |  |                |  |  |  |
| saf# 000-005                                        |  |  |  | 2. Cd, Fe, K, Mg, Mn, Na, Ni,           |  |  |  | 1) Shipped <input checked="" type="checkbox"/> or                              |  |  |  | 1) Present on Outer                                                           |  |  |  |                       |  |  |  |                |  |  |  |
| sdg# H0617                                          |  |  |  | 3. Pb, Sb, Sn, Sr, V, Zn                |  |  |  | Hand Delivered                                                                 |  |  |  | Package <input checked="" type="checkbox"/> or N                              |  |  |  |                       |  |  |  |                |  |  |  |
| COMPOSITE WASTE                                     |  |  |  | Ang ② = ICCL, ICFL, ICNO2, ICNO3, IC504 |  |  |  | Airbill <input checked="" type="checkbox"/>                                    |  |  |  | 2) Unbroken on Outer                                                          |  |  |  |                       |  |  |  |                |  |  |  |
| 22                                                  |  |  |  | 5. _____                                |  |  |  | 2) Ambient or Chilled                                                          |  |  |  | Package <input checked="" type="checkbox"/> or N                              |  |  |  |                       |  |  |  |                |  |  |  |
|                                                     |  |  |  | 6. _____                                |  |  |  | 3) Received in Good Condition <input checked="" type="checkbox"/> or N         |  |  |  | 3) Present on Sample <input checked="" type="checkbox"/> or N                 |  |  |  |                       |  |  |  |                |  |  |  |
|                                                     |  |  |  |                                         |  |  |  | 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N |  |  |  | 4) Unbroken on Sample <input checked="" type="checkbox"/> or N                |  |  |  |                       |  |  |  |                |  |  |  |
|                                                     |  |  |  |                                         |  |  |  | 5) Received Within Holding Times <input checked="" type="checkbox"/> or N      |  |  |  | COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N |  |  |  |                       |  |  |  |                |  |  |  |
| Relinquished by                                     |  |  |  | Received by                             |  |  |  | Date                                                                           |  |  |  | Time                                                                          |  |  |  | Cooler Temp. 5.4 °C   |  |  |  |                |  |  |  |
| 11/10/99                                            |  |  |  | 11/10/99                                |  |  |  | 0930                                                                           |  |  |  |                                                                               |  |  |  | NO2 + NO3 out         |  |  |  |                |  |  |  |
| ORIGINAL                                            |  |  |  | REWRITTEN                               |  |  |  | Discrepancies Between Samples Labels and COC Record? Y or N                    |  |  |  | 42357953 1436                                                                 |  |  |  |                       |  |  |  |                |  |  |  |
|                                                     |  |  |  |                                         |  |  |  | NOTES:                                                                         |  |  |  |                                                                               |  |  |  |                       |  |  |  |                |  |  |  |



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## CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-005-155

Page 1 of 1

|                                                                              |                                            |                                                     |                      |
|------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------|----------------------|
| Collector<br><b>K. Hulse</b>                                                 | Contact/Requester<br><b>JH KESSNER</b>     | Telephone No.<br><b>(509) 375-4688</b>              | MSIN<br><b>FAX</b>   |
| SAF No.<br><b>C00-005</b>                                                    | Sampling Origin<br><b>HANFORD SITE</b>     | Purchase Order/Charge Code                          |                      |
| Project Title<br><b>100-HR3-1AM (1 &amp; 2) GW MONITORING, NOVEMBER 1999</b> | Logbook No.<br><b>W/W-SML- H30</b>         | Ice Chest No.                                       | Temp.<br><b>40°C</b> |
| Shipped To (Lab)<br><b>TMA/RECRA</b>                                         | Method of Shipment<br><b>GOVT. VEHICLE</b> | Bill of Lading/Air Bill No.<br><b>42357953 1436</b> |                      |
| Protocol<br><b>CERCLA</b>                                                    | Data Turnaround<br><b>45 Days</b>          | Offsite Property No.<br><b>W0000024</b>             |                      |

## POSSIBLE SAMPLE HAZARDS/REMARKS

.. ..

## SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI  
FAX COPIES OF QES & TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No.   | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|--------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| ✓ B0WR06 (F) |        | W | 11/4/99 | 0949 | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| ✓ B0WR07     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| ✓ B0WR07     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| ✓ B0WR07     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |
|              |        |   |         |      |                   |                                                                   |               |

|                                     |                           |                                                                                |                                   |                                          |                         |                        |                                   |                                                                                                                                                                                                                                          |
|-------------------------------------|---------------------------|--------------------------------------------------------------------------------|-----------------------------------|------------------------------------------|-------------------------|------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br><b>KB Hulse</b>  | Print<br><b>282 Hulse</b> | Sign<br><b>282 Hulse</b>                                                       | Date/Time<br><b>NOV 04 1999</b>   | Received By<br><b>Fed Ex</b>             | Print<br><b>11-4-99</b> | Sign<br><b>11-4-99</b> | Date/Time<br><b>11-4-99</b>       | <b>Matrix *</b><br>S = Soil      DS = Drum Solid<br>SE = Sediment      DL = Drum Liquid<br>SO = Solid      T = Tissue<br>SL = Sludge      W = Wine<br>W = Water      L = Liquid<br>O = Oil      V = Vegetation<br>A = Air      X = Other |
| Relinquished By<br><b>Fed Ex</b>    |                           |                                                                                | Date/Time<br><b>11-5-99 10:00</b> | Received By<br><b>TNU M. Goldensberg</b> |                         |                        | Date/Time<br><b>11-5-99 10:00</b> |                                                                                                                                                                                                                                          |
| Relinquished By<br><b>282 Hulse</b> |                           |                                                                                | Date/Time<br><b>11/10/99 0930</b> | Received By<br><b>282 Hulse</b>          |                         |                        | Date/Time<br><b>11/10/99 0930</b> |                                                                                                                                                                                                                                          |
| Relinquished By                     |                           |                                                                                | Date/Time                         | Received By                              |                         |                        | Date/Time                         |                                                                                                                                                                                                                                          |
| <b>FINAL SAMPLE DISPOSITION</b>     |                           | Disposal Method (e.g., Return to customer, per lab procedure, used in process) |                                   |                                          | Disposed By             |                        | Date/Time                         |                                                                                                                                                                                                                                          |

Temp 5.4



PNNL

## CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-005-10,

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|                                                                  |                                     |                                                          |               |
|------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------|---------------|
| Collector<br>D.R. BREWINGTON                                     | Contact/Requester<br>JH KESSNER     | Telephone No.<br>(509) 375-4688                          | MSIN<br>FAX   |
| SAF No.<br>C00-005                                               | Sampling Origin<br>HANFORD SITE     | Purchase Order/Charge Code                               |               |
| Project Title<br>100-HR3-IAM (1 & 2) GW MONITORING NOVEMBER 1999 | Logbook No.<br>WIN-SIML-1129        | Ice Chest No.<br>645118                                  | Temp.<br>4 °C |
| Shipped To (Lab)<br>TMA/RECRA                                    | Method of Shipment<br>GOVT. VEHICLE | Bill of Lading/Air Bill No.<br>4235 79531436 DRH 11/6/99 |               |
| Protocol<br>CERCLA                                               | Date Turnaround<br>45 Days          | Offsite Property No.<br>W 000002424                      |               |

POSSIBLE SAMPLE HAZARDS/REMARKS

\* \*

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI  
FAX COPIES OF QES & TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No. | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| BOWRB8 (F) |        | W | 11-4-99 | 0835 | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| BOWRB9     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| BOWRB9     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| BOWRB9     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| BOWRB9     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| BOWRB9     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| BOWRB9     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
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|            |        |   |         |      |                   |                                                                   |               |

|                                      |                            |                     |                            |                                                                                |                            |                     |                            |                                                                                                                                                                                                                                           |
|--------------------------------------|----------------------------|---------------------|----------------------------|--------------------------------------------------------------------------------|----------------------------|---------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br>D.R. BREWINGTON   | Print<br>D.R. Brewington   | Sign<br>[Signature] | Date/Time<br>11/4/99 1400  | Received By<br>FedEx                                                           | Print<br>FedEx             | Sign<br>[Signature] | Date/Time<br>11-4-99       | <b>Matrix *</b><br>S = Soil      DS = Drum Solid<br>SE = Sediment      DL = Drum Liquid<br>SO = Solid      T = Tissue<br>SL = Sludge      WI = Wine<br>W = Water      L = Liquid<br>O = Oil      V = Vegetation<br>A = Air      X = Other |
| Relinquished By<br>FedEx             | Print<br>FedEx             | Sign<br>[Signature] | Date/Time<br>11-5-99 10:00 | Received By<br>TNU M. Goldenberg                                               | Print<br>TNU M. Goldenberg | Sign<br>[Signature] | Date/Time<br>11-5-99 10:00 |                                                                                                                                                                                                                                           |
| Relinquished By<br>L. J. [Signature] | Print<br>L. J. [Signature] | Sign<br>[Signature] | Date/Time<br>11/10/99 0930 | Received By<br>[Signature]                                                     | Print<br>[Signature]       | Sign<br>[Signature] | Date/Time<br>11/10/99 0930 |                                                                                                                                                                                                                                           |
| Relinquished By                      | Print                      | Sign                | Date/Time                  | Received By                                                                    | Print                      | Sign                | Date/Time                  |                                                                                                                                                                                                                                           |
| <b>FINAL SAMPLE DISPOSITION</b>      |                            |                     |                            | Disposal Method (e.g., Return to customer, per lab procedure, used in process) |                            |                     |                            | Disposed By<br>Date/Time                                                                                                                                                                                                                  |



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## CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-005-1

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|                                                                  |                                     |                                              |               |     |
|------------------------------------------------------------------|-------------------------------------|----------------------------------------------|---------------|-----|
| Collector<br>D.R. BREWINGTON                                     | Contact/Requester<br>JH KESSNER     | Telephone No.<br>(509) 375-4688              | MSIN          | FAX |
| SAF No.<br>C00-005                                               | Sampling Origin<br>HANFORD SITE     | Purchase Order/Charge Code                   |               |     |
| Project Title<br>100-HR3-1AM (1 & 2) GW MONITORING NOVEMBER 1999 | Logbook No.<br>11-17-517L-1129      | Ice Chest No.<br>6W5119                      | Temp.<br>4 °C |     |
| Shipped To (Lab)<br>TMA/RECRA                                    | Method of Shipment<br>GOVT. VEHICLE | Bill of Lading/Air Bill No.<br>4235-79531436 |               |     |
| Protocol<br>CERCLA                                               | Date Turnaround<br>45 Days          | Offsite Property No.<br>W0000024             |               |     |

## POSSIBLE SAMPLE HAZARDS/REMARKS

\*\* \*\*

## SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

FAX COPIES OF QES &amp; TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No. | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| B0WR51 (F) |        | W | 11-4-99 | 0948 | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| B0WR52     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |

|                                    |                          |                     |                            |                                  |                            |                     |                            |                                                                                                                                                                                                                                          |
|------------------------------------|--------------------------|---------------------|----------------------------|----------------------------------|----------------------------|---------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br>D.R. BREWINGTON | Print<br>D.R. Brewington | Sign<br>[Signature] | Date/Time<br>11/4/99 1400  | Received By<br>Fed Ex            | Print<br>Fed Ex            | Sign<br>[Signature] | Date/Time<br>11-4-99       | <b>Matrix *</b><br>S = Soil      DS = Drum Solid<br>SE = Sediment      DL = Drum Liquid<br>SO = Solid      T = Tissue<br>SL = Sludge      W = Wine<br>W = Water      L = Liquid<br>O = Oil      V = Vegetation<br>A = Air      X = Other |
| Relinquished By<br>Fed Ex          | Print<br>Fed Ex          | Sign<br>[Signature] | Date/Time<br>11-5-99 10:00 | Received By<br>TNU M. Goldenberg | Print<br>TNU M. Goldenberg | Sign<br>[Signature] | Date/Time<br>11-5-99 10:00 |                                                                                                                                                                                                                                          |
| Relinquished By<br>Fed Ex          | Print<br>Fed Ex          | Sign<br>[Signature] | Date/Time<br>11/10/99 0930 | Received By<br>[Signature]       | Print<br>[Signature]       | Sign<br>[Signature] | Date/Time<br>11/10/99 0930 |                                                                                                                                                                                                                                          |
| Relinquished By                    | Print                    | Sign                | Date/Time                  | Received By                      | Print                      | Sign                | Date/Time                  |                                                                                                                                                                                                                                          |

## FINAL SAMPLE DISPOSITION

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

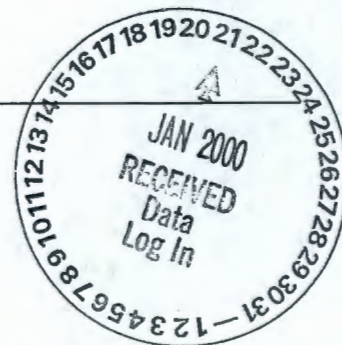
Disposed By

Date/Time



**RECRA  
ENVIRONMENTAL  
INC.**

Chemical and Environmental Measurement Information



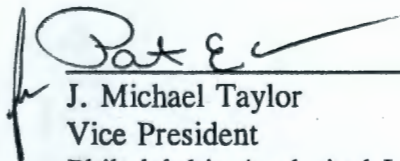
**Recra LabNet Philadelphia  
Analytical Report**

**Client : TNU-HANFORD C00-005**  
**RFW# : 9911L679**  
**SDG# : H0617**  
**SAF# : C00-005**

**W.O. # : 10985-001-001-9999-00**  
**Date Received: 11-10-99**

**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 and Nitrite 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.

  
\_\_\_\_\_  
J. Michael Taylor  
Vice President  
Philadelphia Analytical Laboratory

12-16-99  
Date

njp\111-679

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 13 pages.



WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

|                                                                                                                                       | <u>EPA /600</u>                           | <u>SW846</u>                    | <u>OTHER</u>         |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------|----------------------|
| Acidity                                                                                                                               | 305.1                                     |                                 |                      |
| ___ Alkalinity ___ Bicarbonate ___ Carbonate                                                                                          | 310.1                                     |                                 |                      |
| BOD                                                                                                                                   | 405.1                                     |                                 | 5210B (b)            |
| Ion Chromatography:                                                                                                                   |                                           |                                 |                      |
| ___ Bromide <input checked="" type="checkbox"/> Chloride <input checked="" type="checkbox"/> Fluoride                                 | <input checked="" type="checkbox"/> 300.0 | 9056                            |                      |
| <input checked="" type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Nitrate <input checked="" type="checkbox"/> Phosphate | <input checked="" type="checkbox"/> 300.0 | 9056                            |                      |
| <input checked="" type="checkbox"/> Sulfate ___ Formate ___ Acetate ___ Oxalate                                                       | <input checked="" type="checkbox"/> 300.0 | 9056                            |                      |
| Chloride                                                                                                                              | 325.2                                     | 9251                            |                      |
| Chlorine, Residual                                                                                                                    | 330.5 (mod)                               |                                 |                      |
| Cyanide, Amenable to Chlorination                                                                                                     | 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                     |                      |
| 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 11/12/99

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE | SITE ID | ANALYTE        | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|---------|----------------|--------|-------|--------------------|--------------------|
| -----  | -----   | -----          | -----  | ----- | -----              | -----              |
| -002   | BOWR07  | Chloride by IC | 18.7   | MG/L  | 1.2                | 5.0                |
|        |         | 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  | 31     | MG/L  | 1.2                | 5.0                |
|        |         | Sulfate by IC  | 79.0   | MG/L  | 5.0                | 20.0               |
| -004   | BOWRB9  | Chloride by IC | 18.1   | MG/L  | 1.2                | 5.0                |
|        |         | 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  | 47     | MG/L  | 5.0                | 20                 |
|        |         | Sulfate by IC  | 62.3   | MG/L  | 5.0                | 20.0               |
| -006   | BOWR52  | Chloride by IC | 18.6   | MG/L  | 1.2                | 5.0                |
|        |         | Fluoride by IC | 2.5 u  | MG/L  | 2.5                | 5.0                |
|        |         | Nitrite by IC  | 0.25 u | MG/L  | 0.25               | 1.0                |
|        |         | Nitrate by IC  | 380    | MG/L  | 25                 | 100                |
|        |         | Sulfate by IC  | 94.2   | MG/L  | 5.0                | 20.0               |

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/12/99

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE  | SITE ID      | ANALYTE        | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|---------|--------------|----------------|--------|-------|--------------------|--------------------|
| -----   | -----        | -----          | -----  | ----- | -----              | -----              |
| BLANK10 | 99LICA95-MB1 | 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                |
|         |              | Sulfate by IC  | 0.25 u | MG/L  | 0.25               | 1.0                |



Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/12/99

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE  | SITE ID      | ANALYTE        | SPIKED<br>SAMPLE | INITIAL<br>RESULT | SPIKED<br>AMOUNT | %RECOV | DILUTION<br>FACTOR (SPK) |
|---------|--------------|----------------|------------------|-------------------|------------------|--------|--------------------------|
| -----   | -----        | -----          | -----            | -----             | -----            | -----  | -----                    |
| -004    | B0WRB9       | Chloride by IC | 43.2             | 18.1              | 25.0             | 100.2  | 5.0                      |
|         |              | Fluoride by IC | 11.5             | 0.14              | 10.0             | 114.0  | 1.0                      |
|         |              | Nitrite by IC  | 4.5              | 0.25u             | 5.0              | 89.3   | 1.0                      |
|         |              | Nitrate by IC  | 140              | 47                | 100              | 96.5   | 20                       |
|         |              | Sulfate by IC  | 162              | 62.3              | 100              | 100.2  | 20.0                     |
| BLANK10 | 99LICA95-MB1 | Chloride by IC | 4.7              | 0.25u             | 5.0              | 93.3   | 1.0                      |
|         |              | Fluoride by IC | 10.7             | 0.50u             | 10.0             | 106.6  | 1.0                      |
|         |              | Nitrite by IC  | 5.1              | 0.25u             | 5.0              | 101.1  | 1.0                      |
|         |              | Nitrate by IC  | 4.8              | 0.25u             | 5.0              | 96.0   | 1.0                      |
|         |              | Sulfate by IC  | 4.7              | 0.25u             | 5.0              | 94.7   | 1.0                      |

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/12/99

CLIENT: TNU-HANFORD C00-005

RECRA LOT #: 9911L679

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

| SAMPLE  | SITE ID | ANALYTE        | INITIAL<br>RESULT | REPLICATE | RPD   | DILUTION<br>FACTOR (REP) |
|---------|---------|----------------|-------------------|-----------|-------|--------------------------|
| =====   | =====   | =====          | =====             | =====     | ===== | =====                    |
| -004REP | BOWRB9  | Chloride by IC | 18.1              | 18.4      | 1.5   | 5.0                      |
|         |         | Fluoride by IC | 0.50u             | 0.50u     | NC    | 1.0                      |
|         |         | Nitrite by IC  | 0.25u             | 0.25u     | NC    | 1.0                      |
|         |         | Nitrate by IC  | 47                | 46        | 2.8   | 20                       |
|         |         | Sulfate by IC  | 62.3              | 62.5      | 0.32  | 20.0                     |

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|--------|------------|-----------|----------|
|---------------------|-------|-----|--------|------------|-----------|----------|

B0WR07

|                |     |   |          |          |          |          |
|----------------|-----|---|----------|----------|----------|----------|
| CHLORIDE BY IC | 002 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| FLUORIDE BY IC | 002 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRITE BY IC  | 002 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRATE BY IC  | 002 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| SULFATE BY IC  | 002 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |

B0WRB9

|                |         |   |          |          |          |          |
|----------------|---------|---|----------|----------|----------|----------|
| CHLORIDE BY IC | 004     | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| CHLORIDE BY IC | 004 REP | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| CHLORIDE BY IC | 004 MS  | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| FLUORIDE BY IC | 004     | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| FLUORIDE BY IC | 004 REP | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| FLUORIDE BY IC | 004 MS  | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRITE BY IC  | 004     | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRITE BY IC  | 004 REP | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRITE BY IC  | 004 MS  | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRATE BY IC  | 004     | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRATE BY IC  | 004 REP | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRATE BY IC  | 004 MS  | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| SULFATE BY IC  | 004     | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| SULFATE BY IC  | 004 REP | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| SULFATE BY IC  | 004 MS  | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |

B0WR52

|                |     |   |          |          |          |          |
|----------------|-----|---|----------|----------|----------|----------|
| CHLORIDE BY IC | 006 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| FLUORIDE BY IC | 006 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRITE BY IC  | 006 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| NITRATE BY IC  | 006 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |
| SULFATE BY IC  | 006 | W | 99LICA95 | 11/04/99 | 11/11/99 | 11/11/99 |

LAB QC:

|                |     |   |          |     |          |          |
|----------------|-----|---|----------|-----|----------|----------|
| CHLORIDE BY IC | MB1 | W | 99LICA95 | N/A | 11/11/99 | 11/11/99 |
|----------------|-----|---|----------|-----|----------|----------|



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD C00-005

DATE RECEIVED: 11/10/99

RFW LOT # :9911L679

| CLIENT ID /ANALYSIS | RFW #  | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|----------|------------|-----------|----------|
| CHLORIDE BY IC      | MB1 BS | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| FLUORIDE BY IC      | MB1    | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| FLUORIDE BY IC      | MB1 BS | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| NITRITE BY IC       | MB1    | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| NITRITE BY IC       | MB1 BS | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| NITRATE BY IC       | MB1    | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| NITRATE BY IC       | MB1 BS | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| SULFATE BY IC       | MB1    | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |
| SULFATE BY IC       | MB1 BS | W   | 99LICA95 | N/A        | 11/11/99  | 11/11/99 |

**All**

**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

|                                                                                                                                           |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Special Instructions:</b></p> <p>Lab # 000-005</p> <p>Adg # H0617</p> <p style="text-align: center;"><b>COMPOSITE<br/>WASTE</b></p> | <p><b>DATE/REVISIONS:</b></p> <p>Met ① = Ag, Al, Ba, Be, Ca, Co, Cu, Cr,</p> <p>2. Cd, Fe, K, Mg, Mn, Na, Ni,</p> <p>3. Pb, Sb, Sn, Sr, V, Zn</p> <p>Ang ④ = ICCL, ICFL, ICNO<sub>2</sub>, ICNO<sub>3</sub>, IC SO<sub>4</sub></p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p> | <p style="text-align: center;"><b>RECRA LabNet Use Only</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Samples were:</p> <p>1) Shipped <input checked="" type="checkbox"/> or<br/>Hand Delivered <input checked="" type="checkbox"/></p> <p>Airbill <input checked="" type="checkbox"/></p> <p>2) Ambient or Chilled <input checked="" type="checkbox"/></p> <p>3) Received in Good Condition <input checked="" type="checkbox"/> or N</p> <p>4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N</p> <p>5) Received Within Holding Times <input checked="" type="checkbox"/> or N</p> </div> <div style="width: 45%;"> <p>COC Tape was:</p> <p>1) Present on Outer Package <input checked="" type="checkbox"/> or N</p> <p>2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N</p> <p>3) Present on Sample <input checked="" type="checkbox"/> or N</p> <p>4) Unbroken on Sample <input checked="" type="checkbox"/> or N</p> <p>COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N</p> <p>Cooler Temp. 54 °C</p> </div> </div> <p>NOTES: 42357953 1436</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                 |             |          |      |                       |             |      |      |
|-----------------|-------------|----------|------|-----------------------|-------------|------|------|
| Relinquished by | Received by | Date     | Time | Relinquished by       | Received by | Date | Time |
| Reddy           | Reddy       | 11/10/99 | 0930 | ORIGINAL<br>REWRITTEN |             |      |      |



4411 L 677

PNNL

## CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

C00-005-155

Page 1 of 1

|                                                                             |                                            |                                                  |                    |
|-----------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------|
| Collector<br><b>K. Hulse</b>                                                | Contact/Requester<br><b>JH KESSNER</b>     | Telephone No.<br><b>(509) 375-4688</b>           | MSIN<br><b>FAX</b> |
| SAF No.<br><b>C00-005</b>                                                   | Sampling Origin<br><b>HANFORD SITE</b>     | Purchase Order/Charge Code                       |                    |
| Project Title<br><b>100-HR3-IAM (1 &amp; 2) GW MONITORING NOVEMBER 1999</b> | Logbook No.<br><b>W/W-SML- H30</b>         | Ice Chest No.                                    | Temp. <b>40C</b>   |
| Shipped To (Lab)<br><b>TMA/RECRA</b>                                        | Method of Shipment<br><b>GOVT. VEHICLE</b> | Bill of Lading/Air Bill No. <b>42357953 1436</b> |                    |
| Protocol<br><b>CERCLA</b>                                                   | Data Turnaround<br><b>45 Days</b>          | Offsite Property No. <b>W0000024</b>             |                    |

## POSSIBLE SAMPLE HAZARDS/REMARKS

.. ..

## SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption:

Yes ☒No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

FAX COPIES OF QES &amp; TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No. | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| BOWR06 (F) |        | W | 11/4/99 | 0949 | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| BOWR07     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 6010A RCRA GW                                        | HNO3 to pH <2 |
| BOWR07     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| BOWR07     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| BOWR07     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| BOWR07     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| BOWR07     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |

|                                    |                          |                         |                                   |                                          |                        |                       |                                   |                                                                                                                                                                                                                                           |
|------------------------------------|--------------------------|-------------------------|-----------------------------------|------------------------------------------|------------------------|-----------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br><b>KB Hulse</b> | Print<br><b>KB Hulse</b> | Sign<br><b>KB Hulse</b> | Date/Time<br><b>NOV 04 1999</b>   | Received By<br><b>Fed Ex</b>             | Print<br><b>Fed Ex</b> | Sign<br><b>Fed Ex</b> | Date/Time<br><b>11-5-99</b>       | <b>Matrix *</b><br>S = Soil      DS = Drum Solid<br>SE = Sediment      DL = Drum Liquid<br>SO = Solid      T = Tissue<br>SL = Sludge      WI = Wine<br>W = Water      L = Liquid<br>O = Oil      V = Vegetation<br>A = Air      X = Other |
| Relinquished By<br><b>Fed Ex</b>   |                          |                         | Date/Time<br><b>11-5-99 10:00</b> | Received By<br><b>TNU M. Goldensberg</b> |                        |                       | Date/Time<br><b>11-5-99 10:00</b> |                                                                                                                                                                                                                                           |
| Relinquished By<br><b>Fed Ex</b>   |                          |                         | Date/Time<br><b>11/10/99 0930</b> | Received By<br><b>Hand Hemond</b>        |                        |                       | Date/Time<br><b>11/10/99 0930</b> |                                                                                                                                                                                                                                           |
| Relinquished By                    |                          |                         | Date/Time                         | Received By                              |                        |                       | Date/Time                         |                                                                                                                                                                                                                                           |

## FINAL SAMPLE DISPOSITION

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

Disposed By

Date/Time

Temp 5.4



**FAX**

Purchase Order/Charge Code

|               |         |       |      |
|---------------|---------|-------|------|
| Ice Chest No. | GW 5118 | Temp. | 4 °C |
|---------------|---------|-------|------|

Bill of Lading/Air Bill No. 4235 79531436 OR 4/14/57

Offsite Property No. *W 0000024 24*

**Total Activity Exemption:** Yes ☒ No ☐

**SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI  
FAX COPIES OF OES & TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)**

| FINAL SAMPLE<br>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. #

C00-005-111

Page 1 of 1

Collector  
D.R. BREWINGTONContact/Requester  
JH KESSNERTelephone No. MSIN FAX  
(509) 375-4688SAF No.  
C00-005Sampling Origin  
HANFORD SITE

Purchase Order/Charge Code

Project Title  
100-HR3-IAM (1 & 2) GW MONITORING NOVEMBER 1999Logbook No.  
LHM-5ML-1129Ice Chest No. Temp.  
6W5119 4°CShipped To (Lab)  
TMA/RECRAMethod of Shipment  
GOVT. VEHICLE

Bill of Lading/Air Bill No. 4235 79531436

Protocol  
CERCLAData Turnaround  
45 Days

Offsite Property No. W0000024

POSSIBLE SAMPLE HAZARDS/REMARKS  
.. ..

SPECIAL INSTRUCTIONS

Hold Time

Total Activity Exemption: Yes ☒ No ☐

SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

FAX COPIES OF QES &amp; TMA LOG-IN TO DL STEWART (376-1704) AND JH KESSNER (372-9487)

| Sample No. | Lab ID | * | Date    | Time | No/Type Container | Sample Analysis                                                   | Preservative  |
|------------|--------|---|---------|------|-------------------|-------------------------------------------------------------------|---------------|
| B0WR51 (F) |        | W | 11-4-99 | 0948 | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL G/P      | ICP Metals - 8010A RCRA GW                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x500-mL P        | IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate) | Cool 4C       |
| B0WR52     |        | W |         |      | 1x20-mL P         | Activity Scan                                                     | None          |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Alpha                                                       | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 2x1000-mL G/P     | Gross Beta                                                        | HNO3 to pH <2 |
| B0WR52     |        | W |         |      | 1x250-mL P        | Tritium - H3                                                      | None          |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |
|            |        |   |         |      |                   |                                                                   |               |

|                                    |                          |                         |                            |                                  |                            |                           |                            |                                                                                                                                                                                                 |
|------------------------------------|--------------------------|-------------------------|----------------------------|----------------------------------|----------------------------|---------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relinquished By<br>D.R. BREWINGTON | Print<br>D.R. Brewington | Sign<br>D.R. Brewington | Date/Time<br>11/4/99 1400  | Received By<br>Fed Ex            | Print<br>Fed Ex            | Sign<br>Fed Ex            | Date/Time<br>11-4-99       | Matrix *<br>S = Soil DS = Drum Solid<br>SE = Sediment DL = Drum Liquid<br>SD = Solid T = Tissue<br>SL = Sludge WI = Wine<br>W = Water L = Liquid<br>O = Oil V = Vegetation<br>A = Air X = Other |
| Relinquished By<br>Fed Ex          | Print<br>Fed Ex          | Sign<br>Fed Ex          | Date/Time<br>11-5-99 10:00 | Received By<br>TNU M. Goldenberg | Print<br>TNU M. Goldenberg | Sign<br>TNU M. Goldenberg | Date/Time<br>11-5-99 10:00 |                                                                                                                                                                                                 |
| Relinquished By<br>Fed Ex          | Print<br>Fed Ex          | Sign<br>Fed Ex          | Date/Time<br>11/10/99 0930 | Received By<br>Fed Ex            | Print<br>Fed Ex            | Sign<br>Fed Ex            | Date/Time<br>11/10/99 0930 |                                                                                                                                                                                                 |
| Relinquished By                    | Print                    | Sign                    | Date/Time                  | Received By                      | Print                      | Sign                      | Date/Time                  |                                                                                                                                                                                                 |

FINAL SAMPLE  
DISPOSITION

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

Disposed By

Date/Time