

Thermo Retec  
W.O. No. R0-02-045-7348

Bechtel Hanford Inc.  
SDG H0731

**1.0 GENERAL**

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0731 was composed of four liquid (water) samples designated under SAF No. C00-010 with a Project Designation of: 200 UP1 IAM GW Sampling, January 2000.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on March 20, 2000.

**2.0 ANALYSIS NOTES**

**2.1 Technetium-99 Analyses**

Due to the method blank (4%) and LCS (3%) having low yields below 20% the Tc samples were realiquoted with new QC samples. No problems were encountered during the course of the reanalyses. The reanalyzed data is reported herein.

**RECEIVED**  
APR 25 2000

**EDMC**



TMA/RICHMOND

SAMPLE DELIVERY GROUP H0731

SAMPLE SUMMARY

SDG 7348  
Contact Melissa C. Mannion

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG H0731

| CLIENT SAMPLE ID       | LOCATION     | MATRIX | LEVEL | LAB        |         | CHAIN OF   |                |
|------------------------|--------------|--------|-------|------------|---------|------------|----------------|
|                        |              |        |       | SAMPLE ID  | SAF NO  | CUSTODY    | COLLECTED      |
| B0X648                 | Hanford Site | WATER  |       | R002045-01 | C00-010 | C00-010-4  | 02/02/00 11:57 |
| B0X650                 | Hanford Site | WATER  |       | R002045-04 | C00-010 | C00-010-15 | 02/02/00 12:26 |
| B0X653                 | Hanford Site | WATER  |       | R002045-02 | C00-010 | C00-010-11 | 02/02/00 10:02 |
| B0X654                 | Hanford Site | WATER  |       | R002045-03 | C00-010 | C00-010-12 | 02/02/00 10:02 |
| Method Blank           |              | WATER  |       | R002045-09 | C00-010 |            |                |
| Lab Control Sample     |              | WATER  |       | R002045-08 | C00-010 |            |                |
| Duplicate (R002045-02) | Hanford Site | WATER  |       | R002045-10 | C00-010 |            | 02/02/00 10:02 |

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CS  
Version 3.06  
Report date 03/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0731

SDG 7348  
 Contact Melissa C. Mannion

Client Hanford  
 Contract TRB-SBB-207925  
 Case no SDG H0731

QC SUMMARY

| QC BATCH | CHAIN OF CUSTODY | CLIENT SAMPLE ID       | MATRIX | SOLIDS | SAMPLE AMOUNT | BASIS AMOUNT | DAYS SINCE RECEIVED | LAB COLL | LAB SAMPLE ID | DEPARTMENT SAMPLE ID |
|----------|------------------|------------------------|--------|--------|---------------|--------------|---------------------|----------|---------------|----------------------|
| 7348     | C00-010-11       | B0X653                 | WATER  |        |               |              | 02/03/00            | 1        | R002045-02    | 7348-002             |
|          | C00-010-12       | B0X654                 | WATER  |        |               |              | 02/03/00            | 1        | R002045-03    | 7348-003             |
|          | C00-010-15       | B0X650                 | WATER  |        |               |              | 02/03/00            | 1        | R002045-04    | 7348-004             |
|          | C00-010-4        | B0X648                 | WATER  |        |               |              | 02/03/00            | 1        | R002045-01    | 7348-001             |
|          |                  | Method Blank           | WATER  |        |               |              |                     |          | R002045-09    | 7348-009             |
|          |                  | Lab Control Sample     | WATER  |        |               |              |                     |          | R002045-08    | 7348-008             |
|          |                  | Duplicate (R002045-02) | WATER  |        |               |              | 02/03/00            | 1        | R002045-10    | 7348-010             |

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id TMNC  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-QS  
 Version 3.06  
 Report date 03/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0731

SDG 7348  
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford  
Contract TRB-SBB-207925  
Case no SDG H0731

| TEST          | MATRIX | METHOD                 | PREPARATION ERROR |      | PLANCHETS ANALYZED |      |    |       | QUALI- |     |
|---------------|--------|------------------------|-------------------|------|--------------------|------|----|-------|--------|-----|
|               |        |                        | BATCH             | 2σ % | CLIENT             | MORE | RE | BLANK |        | LCS |
| Beta Counting |        |                        |                   |      |                    |      |    |       |        |     |
| TC            | WATER  | Technetium 99 in Water | 6914-082          | 10.0 | 4                  |      |    | 1     | 1      | 1/1 |

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

Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-PBS  
Version 3.06  
Report date 03/20/00

**TMA/RICHMOND**

SAMPLE DELIVERY GROUP H0731

SDG 7348  
 Contact Melissa C. Mannion

Client Hanford  
 Contract TRB-SBB-207925  
 Case no SDG H0731

**WORK SUMMARY**

| CLIENT SAMPLE ID       | LAB SAMPLE ID |            |          |      |      |          |          |     |                        |  |  |
|------------------------|---------------|------------|----------|------|------|----------|----------|-----|------------------------|--|--|
| LOCATION               | MATRIX        | COLLECTED  | PLANCHET | TEST | SUP- | ANALYZED | REVIEWED | BY  | METHOD                 |  |  |
| CUSTODY                | SAF No        | RECEIVED   |          |      | FIX  |          |          |     |                        |  |  |
| BOX648                 |               | R002045-01 | 7348-001 | TC   | A1   | 03/07/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
| Hanford Site           | WATER         | 02/02/00   |          |      |      |          |          |     |                        |  |  |
| C00-010-4              | C00-010       | 02/03/00   |          |      |      |          |          |     |                        |  |  |
| BOX650                 |               | R002045-04 | 7348-004 | TC   | A1   | 03/03/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
| Hanford Site           | WATER         | 02/02/00   |          |      |      |          |          |     |                        |  |  |
| C00-010-15             | C00-010       | 02/03/00   |          |      |      |          |          |     |                        |  |  |
| BOX653                 |               | R002045-02 | 7348-002 | TC   | A1   | 03/03/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
| Hanford Site           | WATER         | 02/02/00   |          |      |      |          |          |     |                        |  |  |
| C00-010-11             | C00-010       | 02/03/00   |          |      |      |          |          |     |                        |  |  |
| BOX654                 |               | R002045-03 | 7348-003 | TC   | A1   | 03/03/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
| Hanford Site           | WATER         | 02/02/00   |          |      |      |          |          |     |                        |  |  |
| C00-010-12             | C00-010       | 02/03/00   |          |      |      |          |          |     |                        |  |  |
| Method Blank           |               | R002045-09 | 7348-009 | TC   |      | 03/06/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
|                        | WATER         |            |          |      |      |          |          |     |                        |  |  |
|                        | C00-010       |            |          |      |      |          |          |     |                        |  |  |
| Lab Control Sample     |               | R002045-08 | 7348-008 | TC   |      | 03/03/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
|                        | WATER         |            |          |      |      |          |          |     |                        |  |  |
|                        | C00-010       |            |          |      |      |          |          |     |                        |  |  |
| Duplicate (R002045-02) |               | R002045-10 | 7348-010 | TC   |      | 03/03/00 | 03/20/00 | MCM | Technetium 99 in Water |  |  |
| Hanford Site           | WATER         | 02/02/00   |          |      |      |          |          |     |                        |  |  |
|                        | C00-010       | 02/03/00   |          |      |      |          |          |     |                        |  |  |

| COUNTS OF TESTS BY SAMPLE TYPE |         |                        |           |        |      |    |       |     |     |       |       |
|--------------------------------|---------|------------------------|-----------|--------|------|----|-------|-----|-----|-------|-------|
| TEST                           | SAF No  | METHOD                 | REFERENCE | CLIENT | MORE | RE | BLANK | LCS | DUP | SPIKE | TOTAL |
| TC                             | C00-010 | Technetium 99 in Water | TC99TRLSC |        | 4    |    | 1     | 1   | 1   |       | 7     |
| TOTALS                         |         |                        |           |        | 4    |    | 1     | 1   | 1   |       | 7     |

Lab id TMANC  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CWS  
 Version 3.06  
 Report date 03/20/00

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

TMA / RICHMOND  
SAMPLE DELIVERY GROUP H0731

R002045-09

Method Blank

METHOD BLANK

|                                   |                                      |                  |
|-----------------------------------|--------------------------------------|------------------|
| SDG <u>7348</u>                   | Client/Case no <u>Hanford</u>        | SDG <u>H0731</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>       |                  |
| Lab sample id <u>R002045-09</u>   | Client sample id <u>Method Blank</u> |                  |
| Dept sample id <u>7348-009</u>    | Material/Matrix _____                | <u>WATER</u>     |
|                                   | SAF No <u>C00-010</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 |
|---------------|------------|-----------------|---------------------------|--------------|--------------|-----------------|------|
| Technetium 99 | 14133-76-7 | 4.50            | 5.0                       | 7.8          | 15           | U               | TC   |

200 UP1 IAM GW Sampling, Jan. 2000

|                |
|----------------|
| QC-BLANK 33592 |
|----------------|

|                             |
|-----------------------------|
| 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>03/20/00</u> |

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H0731**

R002045-08

Lab Control Sample

**LAB CONTROL SAMPLE**

|   |  |
|---|--|
| SDG <u>7348</u><br>Contact <u>Melissa C. Mannion</u><br><br>Lab sample id <u>R002045-08</u><br>Dept sample id <u>7348-008</u> | Client/Case no <u>Hanford</u> <u>SDG H0731</u><br>Case no <u>TRB-SBB-207925</u><br><br>Client sample id <u>Lab Control Sample</u><br>Material/Matrix _____ <u>WATER</u><br>SAF No <u>C00-010</u> |
|---|--|

| ANALYTE      | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS TEST | ADDED<br>pCi/L | 2σ ERR<br>pCi/L | REC<br>% | 3σ<br>(TOTAL) | LMTS<br>LIMITS | PROTOCOL |
|--------------|-----------------|-------------------|--------------|--------------|----------------------|----------------|-----------------|----------|---------------|----------------|----------|
| Techneium 99 | 1070            | 30                | 10           | 15           | TC                   | 1090           | 44              | 98       | 84-116        | 80-120         |          |

200 UP1 IAM GW Sampling, Jan. 2000

QC-LCS 33591

|                             |
|-----------------------------|
| 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>03/20/00</u> |

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H0731

R002045-10

BOX653

**DUPLICATE**

|                                   |                                 |  |
|-----------------------------------|---------------------------------|--|
| SDG <u>7348</u>                   |                                 | Client/Case no <u>Hanford</u> SDG <u>H0731</u>   |
| Contact <u>Melissa C. Mannion</u> |                                 | Case no <u>TRB-SBB-207925</u>                    |
| DUPLICATE                         | ORIGINAL                        |  |
| Lab sample id <u>R002045-10</u>   | Lab sample id <u>R002045-02</u> | Client sample id <u>BOX653</u>                   |
| Dept sample id <u>7348-010</u>    | Dept sample id <u>7348-002</u>  | Location/Matrix <u>Hanford Site</u> <u>WATER</u> |
|                                   | Received <u>02/03/00</u>        | Collected <u>02/02/00 10:02</u>                  |
|                                   |                                 | Custody/SAP No <u>C00-010-11</u> <u>C00-010</u>  |

| ANALYTE       | DUPLICATE<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST | ORIGINAL<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | QUALI-<br>FIERS | RPD<br>% | 3σ<br>TOT | PROT<br>LIMIT |
|---------------|--------------------|-------------------|--------------|--------------|-----------------|------|-------------------|-------------------|--------------|-----------------|----------|-----------|---------------|
| Technetium 99 | 1210               | 30                | 8.6          | 15           |                 | TC   | 986               | 29                | 7.7          |                 | 20       | 22        |               |

200 UP1 IAM GW Sampling, Jan. 2000

QC-DUP#2A1 33593

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 9

|                             |
|-----------------------------|
| 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>03/20/00</u> |



**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0731**

R002045-01

BOX648

**DATA SHEET**

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| <u>SDG 7348</u>                   | Client/Case no <u>Hanford</u>       | <u>SDG H0731</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>R002045-01</u>   | Client sample id <u>BOX648</u>      |                  |
| Dept sample id <u>7348-001</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>02/03/00</u>          | Collected <u>02/02/00 11:57</u>     |                  |
|                                   | Custody/SAF No <u>C00-010-4</u>     | <u>C00-010</u>   |

| ANALYTE       | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|---------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Technetium 99 | 14133-76-7 | 123             | 10                | 8.0          | 15           |                 | TC   |

200 UP1 IAM GW Sampling, Jan. 2000

|                             |
|-----------------------------|
| 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>03/20/00</u> |

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0731**

R002045-04

BOX650

**DATA SHEET**

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7348</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0731</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>R002045-04</u>   | Client sample id <u>BOX650</u>      |                  |
| Dept sample id <u>7348-004</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>02/03/00</u>          | Collected <u>02/02/00 12:26</u>     |                  |
|                                   | Custody/SAP No <u>C00-010-15</u>    | <u>C00-010</u>   |

| ANALYTE       | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|---------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Technetium 99 | 14133-76-7 | 1660            | 35                | 6.7          | 15           |                 | TC   |

200 UP1 IAM GW Sampling, Jan. 2000

|                             |
|-----------------------------|
| 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>03/20/00</u> |

TMA / RICHMOND  
SAMPLE DELIVERY GROUP H0731

R002045-02

BOX653

DATA SHEET

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7348</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0731</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>R002045-02</u>   | Client sample id <u>BOX653</u>      |                  |
| Dept sample id <u>7348-002</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>02/03/00</u>          | Collected <u>02/02/00 10:02</u>     |                  |
|                                   | Custody/SAF No <u>C00-010-11</u>    | <u>C00-010</u>   |

| ANALYTE       | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|---------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Technetium 99 | 14133-76-7 | 986             | 29                | 7.7          | 15           |                 | TC   |

200 UP1 IAM GW Sampling, Jan. 2000

|                             |
|-----------------------------|
| 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>03/20/00</u> |

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H0731**

R002045-03

BOX654

**DATA SHEET**

|                                   |                                     |                  |
|-----------------------------------|-------------------------------------|------------------|
| SDG <u>7348</u>                   | Client/Case no <u>Hanford</u>       | SDG <u>H0731</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>TRB-SBB-207925</u>      |                  |
| Lab sample id <u>R002045-03</u>   | Client sample id <u>BOX654</u>      |                  |
| Dept sample id <u>7348-003</u>    | Location/Matrix <u>Hanford Site</u> | <u>WATER</u>     |
| Received <u>02/03/00</u>          | Collected <u>02/02/00 10:02</u>     |                  |
|                                   | Custody/SAF No <u>C00-010-12</u>    | <u>C00-010</u>   |

| ANALYTE       | CAS NO     | RESULT<br>pCi/L | 2σ ERR<br>(COUNT) | MDA<br>pCi/L | RDL<br>pCi/L | QUALI-<br>FIERS | TEST |
|---------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Technetium 99 | 14133-76-7 | 1160            | 31                | 7.7          | 15           |                 | TC   |

200 UP1 IAM GW Sampling, Jan. 2000

|                             |
|-----------------------------|
| 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>03/20/00</u> |

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0731

METHOD SUMMARY

TECHNETIUM 99 IN WATER  
BETA COUNTING

Test TC Matrix WATER  
SDG 7348  
Contact Melissa C. Mannion

Client Hanford  
Contract TRB-SBB-207925  
Contract SDG H0731

RESULTS

| CLIENT SAMPLE ID           | LAB SAMPLE ID | RAW TEST | SUP-FIX  | PLANCHET | Technetium 99 |
|----------------------------|---------------|----------|----------|----------|---------------|
| Preparation batch 6914-082 |               |          |          |          |               |
| BOX648                     | R002045-01    | A1       | 7348-001 | 123      |               |
| BOX650                     | R002045-04    | A1       | 7348-004 | 1660     |               |
| BOX653                     | R002045-02    | A1       | 7348-002 | 986      |               |
| BOX654                     | R002045-03    | A1       | 7348-003 | 1160     |               |
| BLK (QC ID=33592)          | R002045-09    |          | 7348-009 | U        |               |
| LCS (QC ID=33591)          | R002045-08    |          | 7348-008 | ok       |               |
| Duplicate (R002045-02)     | R002045-10    |          | 7348-010 | ok       |               |

Nominal values and limits from method RDLs (pCi/L) 15  
200 UP1 IAM GW Sampling, Jan. 2000

METHOD PERFORMANCE

| CLIENT SAMPLE ID   | LAB SAMPLE ID | RAW TEST | SUP-FIX | MDA pCi/L | ALIQ L | PREP FAC | DILU-TION | YIELD % | EFF % | COUNT min | FWHM keV | DRIFT KeV | DAYS HELD | PREPARED | ANALYZED | DETECTOR |
|--|---------------|----------|---------|-----------|--------|----------|-----------|---------|-------|-----------|----------|-----------|-----------|----------|----------|----------|
| Preparation batch 6914-082 2σ prep error 10.0 % Reference Lab Notebook 6914 pg. 82 |               |          |         |           |        |          |           |         |       |           |          |           |           |          |          |          |
| BOX648   | R002045-01    | A1       | 8.0     | 0.0500    |        |          |           | 78      | 130   |           |          | 34        | 02/29/00  | 03/07    | GRB-207  |          |
| BOX650   | R002045-04    | A1       | 6.7     | 0.0500    |        |          |           | 100     | 101   |           |          | 30        | 02/29/00  | 03/03    | GRB-220  |          |
| BOX653   | R002045-02    | A1       | 7.7     | 0.0500    |        |          |           | 89      | 101   |           |          | 30        | 02/29/00  | 03/03    | GRB-218  |          |
| BOX654   | R002045-03    | A1       | 7.7     | 0.0500    |        |          |           | 89      | 101   |           |          | 30        | 02/29/00  | 03/03    | GRB-219  |          |
| BLK (QC ID=33592)  | R002045-09    |          | 7.8     | 0.0500    |        |          |           | 82      | 111   |           |          |           | 02/29/00  | 03/06    | GRB-224  |          |
| LCS (QC ID=33591)  | R002045-08    |          | 10      | 0.0500    |        |          |           | 72      | 101   |           |          |           | 02/29/00  | 03/03    | GRB-229  |          |
| Duplicate (R002045-02)<br>(QC ID=33593)  | R002045-10    |          | 8.6     | 0.0500    |        |          |           | 83      | 101   |           |          | 30        | 02/29/00  | 03/03    | GRB-231  |          |

Nominal values and limits from method 15 0.0500 20-105 50 180

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 14

Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 03/29/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0731

METHOD SUMMARY, cont.

TECHNETIUM 99 IN WATER  
BETA COUNTING

Test TC Matrix WATER  
SDG 7348  
Contact Melissa C. Mannion

Client Hanford  
Contract TRB-SBB-207925  
Contract SDG H0731

| PROCEDURES | REFERENCE  | TC99TRLSC |
|------------|--|-----------|
| CP-021     | Preparation of Tc-99m Tracer, rev 0                                    |           |
| CP-002     | Q.C. Preparation, rev 2  |           |
| CP-003     | Tracing, rev 2   |           |
| CP-541     | Technetium-99 Purification (Water) by Extraction Chromatography, rev 0 |           |
| CP-008     | Heavy Element Electroplating, rev 3                                    |           |

|                     |                                 |
|---------------------|---------------------------------|
| AVERAGES $\pm$ 2 SD | MDA <u>8.1</u> $\pm$ <u>2.0</u> |
| FOR 7 SAMPLES       | YIELD <u>85</u> $\pm$ <u>18</u> |

Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 03/20/00

PNNL

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#

C00-010-4

2-3-00  
KJ

Page 1 of 1

|   |   |  |                 |     |
|---|---|--|-----------------|-----|
| Collector<br><b>K.J. YOUNG</b>                        | Contact/Requester<br>JH KESSNER <b>H0731 (7348)</b> | Telephone No.<br>(509) 375-4688                      | MSIN <b>RAD</b> | FAX |
| SAF No.<br>C00-010                                    | Sampling Origin<br>HANFORD SITE                     | Purchase Order/Charge Code <b>SMH 506 H0731</b>      |                 |     |
| Project Title<br>200 UPL IAM GW SAMPLING JANUARY 2000 | Logbook No.<br><b>WIN-SML H 70, PAGE 95</b>         | Ice Chest No.<br><b>SML-69</b>                       | Temp.           |     |
| Shipped To (Lab)<br>TMA/RECRA                         | Method of Shipment<br>GOVT. VEHICLE                 | BILL of Lading/Air BILL No.<br><b>4235 7953 3748</b> |                 |     |
| Protocol<br>CERCLA                                    | Data Turnaround<br>45 Days                          | Offsite Property No.                                 |                 |     |

|  |   |           |   |
|--|---|-----------|---|
| POSSIBLE SAMPLE HAZARDS/REMARKS<br>** ** | SPECIAL INSTRUCTIONS  | Hold Time | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|  | FAX COPIES OF 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 |
|------------|--------|---|--------|------|-------------------|-----------------|--------------|
| BOX648     |        | W | 2-2-00 | 1157 | 1x20-mL P         | Activity Scan   | None         |
| BOX648     |        | W | ↓      | ↓    | 1x1000-mL GFP     | Technetium-99   | HCl to pH <2 |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |

|                                      |       |           |                                  |                                       |       |           |                                 |
|--------------------------------------|-------|-----------|----------------------------------|---------------------------------------|-------|-----------|---------------------------------|
| Relinquished By<br><b>K.J. YOUNG</b> | Print | Signature | Date/Time<br><b>1310 2/02/00</b> | Received By<br><b>FEDEx</b>           | Print | Signature | Date/Time<br><b>2-2-00</b>      |
| Relinquished By<br><b>Fed Ex</b>     |       |           | Date/Time<br><b>2-3-00 9:15</b>  | Received By<br><b>McKover TR Cora</b> |       |           | Date/Time<br><b>2-3-00 9:15</b> |
| Relinquished By                      |       |           | Date/Time                        | Received By                           |       |           | Date/Time                       |
| Relinquished By                      |       |           | Date/Time                        | Received By                           |       |           | Date/Time                       |

- Matrix \*
- S = Soil
  - SE = Sediment
  - SO = Solid
  - Sl. = Sludge
  - W = Water
  - O = Oil
  - A = Air
  - DS = Drum Solid
  - DL = Drum Liquid
  - T = Tissue
  - WI = Wine
  - L. = Liquid
  - V = Vegetation
  - X = Other

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

Collector: **K.J. YOUNG** Contact/Requester: **JH KESSNER** Telephone No. **(509) 375-4688**  
 SAF No. **C00-010** Sampling Origin: **HANFORD SITE** Purchase Order/Charge Code: **CHK SDG H0731**  
 Project Title: **200 UPL IAM GW SAMPLING JANUARY 2000** Logbook No.: **Wm-SML H 30, PAGE 95** Ice Chest No.: **SM-69**  
 Shipped To (Lab): **TMA/RECRA** Method of Shipment: **GOVT. VEHICLE** Bill of Lading/Air Bill No.: **425 7953 3748**  
 Protocol: **CERCLA** Data Turnaround: **45 Days** Offsite Property No.:

POSSIBLE SAMPLE HAZARDS/REMARKS: \*\* \*\*  
 SPECIAL INSTRUCTIONS: Hold Time Total Activity Exemption: Yes  No   
 FAX COPIES OF 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 |
|------------|--------|---|--------|------|-------------------|-----------------|--------------|
| BOX653     |        | W | 2-2-00 | 1002 | 1x20-mL P         | Activity Scan   | None         |
| BOX653     |        | W | ↓      | ↓    | 1x1000-mL GP      | Technetium-99   | HCl to pH <2 |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |

|   |   |  |
|---|---|--|
| Relinquished By: <b>K.J. YOUNG</b> Print Sign <b>1310</b> Date/Time: <b>FEB 02 2000</b> | Received By: <b>FEDEX</b> Print Sign Date/Time: <b>2-2-00</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: <b>Fed Ex</b> Date/Time: <b>2-3-00 9:15</b>                            | Received By: <b>ADONIS &amp; R. CURSU</b> Date/Time: <b>2-3-00 9:15</b> |  |
| Relinquished By:  | Received By:  |  |
| Relinquished By:  | Received By:  |  |

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



|   |   |   |
|---|---|---|
| Collector <b>K.J. YOUNG</b>                           | Contact/Requester<br>JH KESSNER <b>H0731 (7348)</b> | Telephone No. (509) 375-4688<br>MSIN <b>RA0</b> FAX |
| IAF No. C00-010                                       | Sample Origin<br>HANFORD SITE                       | Purchase Order/Charge Code <b>CHPM SOG H0731</b>    |
| Project Title<br>200 UPL IAM GW SAMPLING JANUARY 2000 | Logbook No.<br><b>WM-SML H30, PAGE 95</b>           | Ice Chest No. <b>SML-69</b> Temp.                   |
| Shipped To (Lab)<br>TMA/RECRA                         | Method of Shipment<br>GOVT. VEHICLE                 | Bill of Lading/Air Bill No. <b>4235 7953 3748</b>   |
| Protocol<br>CERCLA                                    | Data Turnaround<br>45 Days                          | Offsite Property No.                                |

POSSIBLE SAMPLE HAZARDS/REMARKS: " "

SPECIAL INSTRUCTIONS: Hold Time Total Activity Exemption: Yes  No   
 FAX COPIES OF 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 |
|------------|--------|---|--------|------|-------------------|-----------------|--------------|
| BOX654     |        | W | 2-2-00 | 1002 | 1x20-mL P         | Activity Scan   | None         |
| BOX654     |        | W | ↓      | ↓    | 1x1000-mL GP      | Technetium-99   | HCl to pH <2 |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |
|            |        |   |        |      |                   |                 |              |

|  |       |      |                                 |   |       |      |                                 |  |
|--|-------|------|---------------------------------|---|-------|------|---------------------------------|--|
| Relinquished By<br><b>K.J. YOUNG</b><br><i>[Signature]</i> | Print | Sign | Date/Time<br><b>FEB 02 2000</b> | Received By<br><b>FEDEX</b><br><i>[Signature]</i> | Print | Sign | Date/Time<br><b>2-2-00</b>      | Matrix *<br>S = Soil      DS = Drum Solid<br>SB = 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><i>[Signature]</i>                      |       |      | Date/Time<br><b>2-3-00 9:15</b> | Received By<br><i>[Signature]</i>                 |       |      | Date/Time<br><b>2-3-00 9:15</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.#

C00-010-15

Page 1 of 1

KJ  
2 MSIN  
RAD

|   |   |  |
|---|---|--|
| Collector<br><b>K.J. YOUNG</b>                        | Contact/Requester<br>JH KESSNER <b>H0731 (7348)</b> | Telephone No.<br>(509) 375-4688                      |
| SAF No.<br>C00-010                                    | Sampling Origin<br>HANFORD SITE                     | Purchase Order/Charge Code<br><b>CWTH SDG H0731</b>  |
| Project Title<br>200 LIPLIAM GW SAMPLING JANUARY 2000 | Logbook No.<br><b>WM-SUM H 30, PAGE 95</b>          | Ice Chest No. <b>SARL-69</b> Temp.                   |
| Shipped To (Lab)<br>TMA/RECRA                         | Method of Shipment<br>GOVT. VEHICLE                 | Bill of Lading/Air Bill No.<br><b>4235 7953 3748</b> |
| Protocol<br>CERCLA                                    | Data Turnaround<br>45 Days                          | Offsite Property No.                                 |

|  |   |           |   |
|--|---|-----------|---|
| POSSIBLE SAMPLE HAZARDS/REMARKS<br>" " | SPECIAL INSTRUCTIONS  | Hold Time | Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|  | FAX COPIES OF 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 |
|------------|--------|---|--------|-------|-------------------|-----------------|--------------|
| BOX650     |        | W | 2-2-00 | 12:26 | 1x20-mL P         | Activity Scan   | None         |
| BOX650     |        | W | ↓      | ↓     | 1x1000-mL G/P     | Technetium-99   | HCl to pH <2 |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |
|            |        |   |        |       |                   |                 |              |

|   |                            |                            |                                 |                                   |                       |                            |                                 |  |
|---|----------------------------|----------------------------|---------------------------------|-----------------------------------|-----------------------|----------------------------|---------------------------------|--|
| Relinquished By<br><b>K.J. YOUNG</b> <i>[Signature]</i> | Print<br><b>K.J. YOUNG</b> | Sign<br><i>[Signature]</i> | Date/Time<br><b>FEB 02 2000</b> | Received By<br><b>FEDEX</b>       | Print<br><b>FEDEX</b> | Sign<br><i>[Signature]</i> | Date/Time<br><b>2-2-00</b>      | <b>Matrix *</b><br>S = Soil                    DS = Drum Solid<br>SE = Sediment            DL = Drum Liquid<br>SO = Solid                T = Tinne<br>SL = Shales              WT = Wine<br>W = Water                L = Liquid<br>O = Oil                    V = Vegetation<br>A = Air                    X = Other |
| Relinquished By<br><i>[Signature]</i>                   |                            |                            | Date/Time<br><b>2-3-00 9:15</b> | Received By<br><i>[Signature]</i> |                       |                            | Date/Time<br><b>2-3-00 9:15</b> |  |
| Relinquished By   |                            |                            | Date/Time                       | Received By                       |                       |                            | Date/Time                       |  |
| 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 |
|---------------------------------|--|-------------|-----------|

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Beechtel Hanford (PNNL) Date/Time received 2-3-00 9:15  
 CoC No. COO-010-4, COO-010-11, COO-010-12, COO-010-15  
 Container I.D. No. SML-69 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: 4
7. Number of containers per sample: 2 (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 J. Corso Date: 2-3-00 Time: 9:15

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No []

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