RECEIVED APRIL 28, 2008

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**FLUOR**

## Memorandum

M4W41-SLF-08-447

To: H. Hampt E6-35 Date: April 25, 2008

From: S. L. Fitzgerald, Manager
WSCF Analytical Lab

cc: w/Attachments

| | | | |
|---|---|---|---|
| T. F. Dale | S3-30 | J. E. Trechter | S3-30 |
| H. K. Meznarich | S3-30 | S. J. Trent | E6-35 |
| P. D. Mix | S3-30 | File/LB | |

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20080391 – SAF NUMBER F08-040

Reference:
(1) Groundwater Protection Program-Letter of Instruction, FH-EIS-2003-MEM-001, October 31, 2002

(2) HNF-SD-CD-QAPP-017, Rev. 8, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following information for sample delivery group WSCF20080391:

- Cover Sheet (Attachment 1)
- Narrative (Attachment 2)
- Analytical Results (Attachment 3)
- Sample Receipt Information (Attachment 4)

SLF/grf

Attachments 4

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ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages
Including cover page

# WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20080391
Data Deliverable Date: 14-apr-2008
Data Deliverable: Cover Sheet

| SAF# | Sample ID | WSCF# | Matrix |
|---|---|---|---|
| F08-040 | B1T736 | W08GR00439 | WATER |

M4W41-SLF-08-447

ATTACHMENT 2

**NARRATIVE**

Consisting of 3 pages
Including cover page

## Introduction

One (1) S&GRP sample was received at the WSCF Laboratory on February 28, 2008. Sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

## Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 11 through 12, for a complete listing of approved analytical methods.

## Inorganic Comments

**Anions** – Holding time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See pages 14 through 15 for QC details.

- Sample Duplicate, Matrix Spike and Matrix Spike Duplicate analyzed on sample B1TNL5 (SDG 20080390, SAF F08-039).
- Matrix Spike and Matrix Spike Duplicate recoveries for Chloride above acceptance limits, resulting in an "N" flag.

All other QC controls are within the established limits.

**ICP-AES Metals** – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See pages 16 through 19 for QC details.

- Matrix Spike and Matrix Spike Duplicate analyzed on samples B1T735 (SDG 20080280, SAF F08-040), B1T1T7 (SDG 20080308, SAF F08-037) and B1TFL8 (SDG 20080349, SAF F08-039).
- Aluminum, Magnesium and Potassium preparation blanks showed positive values resulting in "C" flags if applicable.
- Matrix Spike recovery for Aluminum above acceptance limit, resulting in an "N" flag.

All other QC controls are within the established limits.

**ICP-MS Metals** – The holding time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See page 20 for QC details.

- Matrix Spike and Matrix Spike Duplicate analyzed on sample B1T1T7 (SDG 20080308, SAF F08-037).
- Mercury Laboratory Control Sample recovery outside acceptance limit by ~ 4%, but all other QC acceptable resulting in acceptance of sample result.

All other QC controls are within the established limits.

**Radiochemistry Comments**

There are no holding times associated with WSCF's radiochemical methods.

A Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group for GEA and Gross Alpha/Beta. A Blank and Laboratory Control Sample were analyzed for Tc-99 by ICP-MS. See pages 23 through 25 for QC details.

All QC controls are within the established limits.

I certify that this data package is in compliance with the LOI, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager and Client Services as verified by the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

John E. Trechter
WSCF Client Services

M4W41-SLF-08-447

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 19 pages
Including cover page

# WSCF
# ANALYTICAL RESULTS REPORT

**for**

**Groundwater Remediation Program**

**Richland, WA 99354**

**Attention: Steve Trent**

Analytical: S. Fitzgerald 4/25/08

Client Services: John Trechter 4/25/08

*All results are reported on an "as received" basis unless otherwise noted in the comment section.*

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Contract#: FH-EIS-2003-MEM-001
Report#: WSCF20080391
Report Date: 16-apr-2008
*Report WGPP/ver. 5.2*
*Groundwater Remediation Program*

w13qlog v4.2 16-apr-2008 10:52:17

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20080391

| WL# | S# | Batch | QC# | Tray Type | Sample# | Test |
|---|---|---|---|---|---|---|
| 35352 | 2 | 35757 | 40039 | BLANK | | Anions by Ion Chromatography |
| 35352 | 9 | 35757 | 40039 | BLANK | | Anions by Ion Chromatography |
| 35352 | 3 | 35757 | 40039 | LCS | | Anions by Ion Chromatography |
| 35352 | 5 | 35757 | 40039 | DUP | W08GR00438 | Anions by Ion Chromatography |
| 35352 | 6 | 35757 | 40039 | MS | W08GR00438 | Anions by Ion Chromatography |
| 35352 | 7 | 35757 | 40039 | MSD | W08GR00438 | Anions by Ion Chromatography |
| 35352 | 7 | 35757 | 40039 | SPK-RPD | W08GR00438 | Anions by Ion Chromatography |
| 35352 | 8 | 35757 | 40039 | SAMPLE | W08GR00439 | Anions by Ion Chromatography |
| 35380 | 2 | 35785 | 40074 | BLANK | | Anions by Ion Chromatography |
| 35380 | 9 | 35785 | 40074 | BLANK | | Anions by Ion Chromatography |
| 35380 | 3 | 35785 | 40074 | LCS | | Anions by Ion Chromatography |
| 35380 | 5 | 35785 | 40074 | DUP | W08GR00438 | Anions by Ion Chromatography |
| 35380 | 6 | 35785 | 40074 | MS | W08GR00438 | Anions by Ion Chromatography |
| 35380 | 7 | 35785 | 40074 | MSD | W08GR00438 | Anions by Ion Chromatography |
| 35380 | 7 | 35785 | 40074 | SPK-RPD | W08GR00438 | Anions by Ion Chromatography |
| 35352 | 8 | 35785 | 40074 | SAMPLE | W08GR00439 | Anions by Ion Chromatography |
| 35414 | 1 | 35820 | 40134 | BLANK | | ICP Metals Analysis, Grd H20 P |
| 35414 | 2 | 35820 | 40134 | LCS | | ICP Metals Analysis, Grd H20 P |
| 35414 | 8 | 35820 | 40134 | MS | W08GR00301 | ICP Metals Analysis, Grd H20 P |
| 35414 | 9 | 35820 | 40134 | MSD | W08GR00301 | ICP Metals Analysis, Grd H20 P |
| 35414 | 9 | 35820 | 40134 | SPK-RPD | W08GR00301 | ICP Metals Analysis, Grd H20 P |
| 35414 | 11 | 35820 | 40134 | MS | W08GR00318 | ICP Metals Analysis, Grd H20 P |
| 35414 | 12 | 35820 | 40134 | MSD | W08GR00318 | ICP Metals Analysis, Grd H20 P |
| 35414 | 12 | 35820 | 40134 | SPK-RPD | W08GR00318 | ICP Metals Analysis, Grd H20 P |
| 35414 | 4 | 35820 | 40134 | MS | W08GR00351 | ICP Metals Analysis, Grd H20 P |
| 35414 | 5 | 35820 | 40134 | MSD | W08GR00351 | ICP Metals Analysis, Grd H20 P |
| 35414 | 5 | 35820 | 40134 | SPK-RPD | W08GR00351 | ICP Metals Analysis, Grd H20 P |
| 35414 | 14 | 35820 | 40134 | SAMPLE | W08GR00439 | ICP Metals Analysis, Grd H20 P |
| 35520 | 1 | 35926 | 40252 | BLANK | | ICP-200.8 MS All possible meta |
| 35520 | 2 | 35926 | 40252 | LCS | | ICP-200.8 MS All possible meta |
| 35520 | 3 | 35926 | 40252 | MS | W08GR00318 | ICP-200.8 MS All possible meta |
| 35520 | 4 | 35926 | 40252 | MSD | W08GR00318 | ICP-200.8 MS All possible meta |
| 35520 | 4 | 35926 | 40252 | SPK-RPD | W08GR00318 | ICP-200.8 MS All possible meta |
| 35520 | 11 | 35926 | 40252 | SAMPLE | W08GR00439 | ICP-200.8 MS All possible meta |

w13qlog v4.2 16-apr-2008 10:52:17

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20080391

| WL# | S# | Batch | QC# | Tray Type | Sample# | Test |
|---|---|---|---|---|---|---|
| 35345 | 1 | 35750 | 40032 | BLANK | | TC99 by ICP-200.8 MS |
| 35345 | 2 | 35750 | 40032 | LCS | | TC99 by ICP-200.8 MS |
| 35345 | 6 | 35750 | 40032 | SAMPLE | W08GR00439 | TC99 by ICP-200.8 MS |
| 35364 | 1 | 35769 | 40146 | BLANK | | Gamma Energy Analysis-grd H2O |
| 35364 | 2 | 35769 | 40146 | LCS | | Gamma Energy Analysis-grd H2O |
| 35364 | 3 | 35769 | 40146 | DUP | W08GR00439 | Gamma Energy Analysis-grd H2O |
| 35364 | 4 | 35769 | 40146 | SAMPLE | W08GR00439 | Gamma Energy Analysis-grd H2O |
| 35549 | 1 | 35956 | 40266 | BLANK | | Gross Alpha/Gross Beta (AB32) |
| 35549 | 2 | 35956 | 40266 | LCS | | Gross Alpha/Gross Beta (AB32) |
| 35549 | 3 | 35956 | 40266 | DUP | W08GR00439 | Gross Alpha/Gross Beta (AB32) |
| 35549 | 4 | 35956 | 40266 | SAMPLE | W08GR00439 | Gross Alpha/Gross Beta (AB32) |

# WSCF
# METHOD REFERENCES REPORT

**Department:** Inorganic

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

| | | |
|---|---|---|
| **LA-505-411** | LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE | |
| | **HEIS 6010_METALS_ICP** | Inductively Coupled Plasma-Atomic Emmision Spectrometry |
| **LA-505-412** | LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY | |
| | **EPA-600/R-94-111 200.8** | DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS |
| | **HEIS 200.8_METALS_ICPMS** | Inductively Coupled Plasma - Mass Spectrometry |
| | **HEIS RADISOTOPES_ICPMS** | Radioisotopes by ICP/MS |
| **LA-533-410** | LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY | |
| | **EPA-600/R-94-111 300.0** | DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY |
| | **HEIS 300.0_ANIONS_IC** | Determination of Inorganic Anions by Ion Chromatography |

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at http://www2.rl.gov/phmc/as-dol.

# WSCF
# METHOD REFERENCES REPORT

**Department:** Radiochemistry

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

| | | |
|---|---|---|
| **LA-508-415** | LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS | |
| | **HEIS ALPHA_GPC** | GROSS ALPHA GPC |
| | **HEIS BETA_GPC** | GROSS BETA GPC |
| | **HEIS SRTOT_SEP_PRECIP_GP** | Strontium 89/90 |
| **LA-508-481** | LA-508-481: GAMMA ENERGY ANALYSIS USING PROCOUNT SOFTWARE | |
| | **HEIS GAMMA_GS** | Gamma Emmision Spectrometry |

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at http://www2.rl.gov/phmc/as-dol.

# WSCF
# ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent
**SAF Number:** F08-040
**Sample #** W08GR00439
**Client ID:** B1T736 TRENT WSCF

**Matrix:** WATER

**Group #:** WSCF20080391
**Department:** Inorganic
**Sampled:** 02/28/08
**Received:** 02/28/08

| Test Performed | CAS # | Method | RQ | Result | Unit | TP Err | Unit | DF | MDL | PQL | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Anions by Ion Chromatography** | | | | | | | | | | | |
| Fluoride | 16984-48-8 | LA-533-410 | U | < 6.00e-03 | mg/L | | | 1.00 | 6.0e-03 | | 02/28/08 |
| Chloride | 16887-00-6 | LA-533-410 | NU | < 0.0300 | mg/L | | | 1.00 | 0.030 | | 02/29/08 |
| Nitrogen in Nitrite | NO2-N | LA-533-410 | U | < 0.0100 | mg/L | | | 1.00 | 0.010 | | 02/28/08 |
| Nitrogen in Nitrate | NO3-N | LA-533-410 | B | 6.40e-03 | mg/L | | | 1.00 | 5.0e-03 | | 02/28/08 |
| Phosphate (P) by IC | PO4-P | LA-533-410 | U | < 0.0400 | mg/L | | | 1.00 | 0.040 | | 02/28/08 |
| Sulfate | 14808-79-8 | LA-533-410 | U | < 0.0700 | mg/L | | | 1.00 | 0.070 | | 02/29/08 |
| **ICP Metals Analysis, Grd H20 P Prep** | | | | | | | | | | | **03/04/08** |
| **ICP Metals Analysis, Grd H20 P** | | | | | | | | | | | |
| Aluminum | 7429-90-5 | LA-505-411 | NU | < 30.0 | ug/L | | | 1.00 | 30 | | 03/05/08 |
| Iron | 7439-89-6 | LA-505-411 | U | < 9.00 | ug/L | | | 1.00 | 9.0 | | 03/05/08 |
| Magnesium | 7439-95-4 | LA-505-411 | U | < 6.00 | ug/L | | | 1.00 | 6.0 | | 03/05/08 |
| Manganese | 7439-96-5 | LA-505-411 | U | < 4.00 | ug/L | | | 1.00 | 4.0 | | 03/05/08 |
| Potassium | 7440-09-7 | LA-505-411 | C | 108 | ug/L | | | 1.00 | 45 | | 03/05/08 |
| Sodium | 7440-23-5 | LA-505-411 | U | < 27.0 | ug/L | | | 1.00 | 27 | | 03/05/08 |
| Calcium | 7440-70-2 | LA-505-411 | | 35.0 | ug/L | | | 1.00 | 34 | | 03/05/08 |
| Selenium | 7782-49-2 | LA-505-411 | U | < 30.0 | ug/L | | | 1.00 | 30 | | 03/05/08 |
| **ICP-200.8 MS All possible meta Prep** | | | | | | | | | | | **03/12/08** |
| **ICP-200.8 MS All possible meta** | | | | | | | | | | | |
| Mercury | 7439-97-6 | LA-505-412 | U | < 0.0500 | ug/L | | | 1.00 | 0.0500 | | 03/12/08 |

**MDL=Minimum Detection Limit**
**RQ=Result Qualifier**
**TP Err=Total Propagated Error**
**DF=Dilution Factor**

B - The analyte < the RDL but >= the IDL/MDL (inorg)
N - Spike sample recovery is outside control limits.(inorg)
U - Analyzed for but not detected above limiting criteria.
C - The Analyte was found in the Associated Blank.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 02/28/08
Receive Date:02/28/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lab ID: W08GR00438** | | | | | | | | | | | |
| **BATCH QC ASSOCIATED WITH SAMPLE** | | | | | | | | | | | |
| DUP | Fluoride | 16984-48-8 | <1.206 | | RPD | | | n/a | 20.000 | U | 02/28/08 |
| DUP | Nitrogen in Nitrite | NO2-N | <2.01 | | RPD | | | n/a | 20.000 | U | 02/28/08 |
| DUP | Nitrogen in Nitrate | NO3-N | 105.1673 | | RPD | | | 0.047 | 20.000 | | 02/28/08 |
| DUP | Phosphate (P) by IC | PO4-P | 445.746 | | RPD | | | 0.044 | 20.000 | | 02/28/08 |
| MS | Fluoride | 16984-48-8 | 0.565065 | 114.618 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MS | Nitrogen in Nitrite | NO2-N | 0.578827 | 117.648 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MS | Nitrogen in Nitrate | NO3-N | 0.452402 | 101.435 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MS | Phosphate (P) by IC | PO4-P | 0.972732 | 101.644 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MSD | Fluoride | 16984-48-8 | 0.531899 | 107.890 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MSD | Nitrogen in Nitrite | NO2-N | 0.556317 | 113.073 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MSD | Nitrogen in Nitrate | NO3-N | 0.445648 | 99.921 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| MSD | Phosphate (P) by IC | PO4-P | 0.973586 | 101.733 | % Recov | 75.000 | 125.000 | | | | 02/28/08 |
| SPK-RPD | Fluoride | 16984-48-8 | 107.890 | | RPD | | | 6.047 | 20.000 | | 02/28/08 |
| SPK-RPD | Nitrogen in Nitrite | NO2-N | 113.073 | | RPD | | | 3.966 | 20.000 | | 02/28/08 |
| SPK-RPD | Nitrogen in Nitrate | NO3-N | 99.921 | | RPD | | | 1.504 | 20.000 | | 02/28/08 |
| SPK-RPD | Phosphate (P) by IC | PO4-P | 101.733 | | RPD | | | 0.088 | 20.000 | | 02/28/08 |
| **BATCH QC** | | | | | | | | | | | |
| BLANK | Fluoride | 16984-48-8 | <6e-3 | n/a | mg/L | 0.000 | 0.030 | | | U | 02/28/08 |
| BLANK | Fluoride | 16984-48-8 | <6e-3 | n/a | mg/L | 0.000 | 0.030 | | | U | 02/28/08 |
| BLANK | Nitrogen in Nitrite | NO2-N | <1e-2 | n/a | mg/L | 0.000 | 0.020 | | | U | 02/28/08 |
| BLANK | Nitrogen in Nitrite | NO2-N | <1e-2 | n/a | mg/L | 0.000 | 0.020 | | | U | 02/28/08 |
| BLANK | Nitrogen in Nitrate | NO3-N | <5e-3 | n/a | mg/L | 0.000 | 0.040 | | | U | 02/28/08 |
| BLANK | Nitrogen in Nitrate | NO3-N | <5e-3 | n/a | mg/L | 0.000 | 0.040 | | | U | 02/28/08 |
| BLANK | Phosphate (P) by IC | PO4-P | <4e-2 | n/a | mg/L | 0.000 | 0.200 | | | U | 02/28/08 |
| BLANK | Phosphate (P) by IC | PO4-P | <4e-2 | n/a | mg/L | 0.000 | 0.200 | | | U | 02/28/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date:
Receive Date:

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LCS | Fluoride | 16984-48-8 | 104.1203 | 104.538 | % Recov | 80.000 | 120.000 | | | | 02/28/08 |
| LCS | Nitrogen in Nitrite | NO2-N | 98.6177 | 99.213 | % Recov | 80.000 | 120.000 | | | | 02/28/08 |
| LCS | Nitrogen in Nitrate | NO3-N | 91.7818 | 101.867 | % Recov | 80.000 | 120.000 | | | | 02/28/08 |
| LCS | Phosphate (P) by IC | PO4-P | 201.3952 | 104.134 | % Recov | 80.000 | 120.000 | | | | 02/28/08 |

Lab ID: W08GR00438
BATCH QC ASSOCIATED WITH SAMPLE

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DUP | Chloride | 16887-00-6 | 7173.2974 | | RPD | | | 12.264 | 20.000 | | 02/29/08 |
| DUP | Sulfate | 14808-79-8 | 5154.3768 | | RPD | | | 13.250 | 20.000 | | 02/29/08 |
| MS | Chloride | 16887-00-6 | 1.309468 | 131.605 | % Recov | 75.000 | 125.000 | | | | 02/29/08 |
| MS | Sulfate | 14808-79-8 | 2.295793 | 117.132 | % Recov | 75.000 | 125.000 | | | | 02/29/08 |
| MSD | Chloride | 16887-00-6 | 1.380208 | 138.714 | % Recov | 75.000 | 125.000 | | | | 02/29/08 |
| MSD | Sulfate | 14808-79-8 | 2.17343 | 110.889 | % Recov | 75.000 | 125.000 | | | | 02/29/08 |
| SPK-RPD | Chloride | 16887-00-6 | 138.714 | | RPD | | | 5.260 | 20.000 | | 02/29/08 |
| SPK-RPD | Sulfate | 14808-79-8 | 110.889 | | RPD | | | 5.476 | 20.000 | | 02/29/08 |

BATCH QC

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BLANK | Chloride | 16887-00-6 | <3e-2 | n/a | mg/L | 0.000 | 0.030 | | | U | 02/29/08 |
| BLANK | Chloride | 16887-00-6 | <3e-2 | n/a | mg/L | 0.000 | 0.030 | | | U | 02/29/08 |
| BLANK | Sulfate | 14808-79-8 | <7e-2 | n/a | mg/L | 0.000 | 0.200 | | | U | 02/29/08 |
| BLANK | Sulfate | 14808-79-8 | <7e-2 | n/a | mg/L | 0.000 | 0.200 | | | U | 02/29/08 |
| LCS | Chloride | 16887-00-6 | 193.3133 | 96.176 | % Recov | 80.000 | 120.000 | | | | 02/29/08 |
| LCS | Sulfate | 14808-79-8 | 378.2956 | 95.529 | % Recov | 80.000 | 120.000 | | | | 02/29/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 02/14/08
Receive Date:02/14/08

Lab ID: W08GR00301
BATCH QC ASSOCIATED WITH SAMPLE

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | Aluminum | 7429-90-5 | 948.6 | 94.860 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Calcium | 7440-70-2 | 1037.5 | 103.750 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Iron | 7439-89-6 | 977 | 97.700 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Potassium | 7440-09-7 | 10029.9 | 100.299 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Magnesium | 7439-95-4 | 948.1 | 94.810 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Manganese | 7439-96-5 | 993.2 | 99.320 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Sodium | 7440-23-5 | 993.2 | 99.320 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Selenium | 7782-49-2 | 980.3 | 98.030 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Aluminum | 7429-90-5 | 941.6 | 94.160 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Calcium | 7440-70-2 | 1039.5 | 103.950 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Iron | 7439-89-6 | 976.9 | 97.690 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Potassium | 7440-09-7 | 9949.9 | 99.499 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Magnesium | 7439-95-4 | 942.7 | 94.270 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Manganese | 7439-96-5 | 990.2 | 99.020 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Sodium | 7440-23-5 | 994.1 | 99.410 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Selenium | 7782-49 2 | 1011 | 101.100 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| SPK-RPD | Aluminum | 7429-90-5 | 94.160 | | RPD | | | 0.741 | 20.000 | | 03/05/08 |
| SPK-RPD | Calcium | 7440-70-2 | 103.950 | | RPD | | | 0.193 | 20.000 | | 03/05/08 |
| SPK-RPD | Iron | 7439-89-6 | 97.690 | | RPD | | | 0.010 | 20.000 | | 03/05/08 |
| SPK-RPD | Potassium | 7440 09-7 | 99.499 | | RPD | | | 0.801 | 20.000 | | 03/05/08 |
| SPK-RPD | Magnesium | 7439-95-4 | 94.270 | | RPD | | | 0.571 | 20.000 | | 03/05/08 |
| SPK-RPD | Manganese | 7439-96-5 | 99.020 | | RPD | | | 0.303 | 20.000 | | 03/05/08 |
| SPK-RPD | Sodium | 7440-23-5 | 99.410 | | RPD | | | 0.091 | 20.000 | | 03/05/08 |
| SPK-RPD | Selenium | 7782-49-2 | 101.100 | | RPD | | | 3.083 | 20.000 | | 03/05/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 02/20/08
Receive Date:02/20/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lab ID: W08GR00318** | | | | | | | | | | | |
| **BATCH QC ASSOCIATED WITH SAMPLE** | | | | | | | | | | | |
| MS | Aluminum | 7429-90-5 | 910.6 | 91.060 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Calcium | 7440-70-2 | 1016 | 101.600 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Iron | 7439-89-6 | 945 | 94.500 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Potassium | 7440-09-7 | 9471.3 | 94.713 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Magnesium | 7439-95-4 | 897.5 | 89.750 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Sodium | 7440-23-5 | 979.1 | 97.910 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Aluminum | 7429-90-5 | 933.4 | 93.340 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Calcium | 7440-70-2 | 1027 | 102.700 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Iron | 7439-89-6 | 945.6 | 94.560 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Potassium | 7440-09-7 | 9682.3 | 96.823 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Magnesium | 7439-95-4 | 917.5 | 91.750 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Sodium | 7440-23-5 | 993.1 | 99.310 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| SPK-RPD | Aluminum | 7429-90-5 | 93.340 | | RPD | | | 2.473 | 20.000 | | 03/05/08 |
| SPK-RPD | Calcium | 7440-70-2 | 102.700 | | RPD | | | 1.077 | 20.000 | | 03/05/08 |
| SPK-RPD | Iron | 7439-89-6 | 94.560 | | RPD | | | 0.063 | 20.000 | | 03/05/08 |
| SPK-RPD | Potassium | 7440-09-7 | 96.823 | | RPD | | | 2.203 | 20.000 | | 03/05/08 |
| SPK-RPD | Magnesium | 7439-95-4 | 91.750 | | RPD | | | 2.204 | 20.000 | | 03/05/08 |
| SPK-RPD | Sodium | 7440-23-5 | 99.310 | | RPD | | | 1.420 | 20.000 | | 03/05/08 |
| **Lab ID: W08GR00351** | | | | | | | | | | | |
| **BATCH QC ASSOCIATED WITH SAMPLE** | | | | | | | | | | | |
| MS | Aluminum | 7429-90-5 | 1326 | 132.600 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Calcium | 7440-70-2 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Iron | 7439-89-6 | 780.7 | 78.070 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Potassium | 7440-09-7 | 9509 | 95.090 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Magnesium | 7439-95-4 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MS | Manganese | 7439-96-5 | 867.1 | 86.710 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 02/25/08
Receive Date:02/25/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS | Sodium | 7440-23-5 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Aluminum | 7429-90-5 | 1225 | 122.500 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Calcium | 7440-70-2 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Iron | 7439-89-6 | 917 | 91.700 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Potassium | 7440-09-7 | 10719 | 107.190 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Magnesium | 7439-95-4 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Manganese | 7439-96-5 | 875.3 | 87.530 | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| MSD | Sodium | 7440-23-5 | NA | n/a | % Recov | 75.000 | 125.000 | | | | 03/05/08 |
| SPK-RPD | Aluminum | 7429-90-5 | 122.500 | | RPD | | | 7.918 | 20.000 | | 03/05/08 |
| SPK-RPD | Calcium | 7440-70-2 | | | RPD | | | n/a | 20.000 | | 03/05/08 |
| SPK-RPD | Iron | 7439-89-6 | 91.700 | | RPD | | | 16.057 | 20.000 | | 03/05/08 |
| SPK-RPD | Potassium | 7440-09-7 | 107.190 | | RPD | | | 11.964 | 20.000 | | 03/05/08 |
| SPK-RPD | Magnesium | 7439-95-4 | | | RPD | | | n/a | 20.000 | | 03/05/08 |
| SPK-RPD | Manganese | 7439-96-5 | 87.530 | | RPD | | | 0.941 | 20.000 | | 03/05/08 |
| SPK-RPD | Sodium | 7440-23-5 | | | RPD | | | n/a | 20.000 | | 03/05/08 |

## BATCH QC

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BLANK | Aluminum | 7429-90-5 | 34.3 | 34.300 | ug/L | | | | | | 03/05/08 |
| BLANK | Calcium | 7440-70-2 | <34 | n/a | ug/L | | | | | U | 03/05/08 |
| BLANK | Iron | 7439-89-6 | <9 | n/a | ug/L | | | | | U | 03/05/08 |
| BLANK | Potassium | 7440-09-7 | 107 | 107.000 | ug/L | | | | | | 03/05/08 |
| BLANK | Magnesium | 7439-95-4 | 21.8 | 21.800 | ug/L | | | | | | 03/05/08 |
| BLANK | Manganese | 7439-96-5 | <4 | n/a | ug/L | | | | | U | 03/05/08 |
| BLANK | Sodium | 7440-23-5 | <27 | n/a | ug/L | | | | | U | 03/05/08 |
| BLANK | Selenium | 7782-49-2 | <30 | n/a | ug/L | | | | | U | 03/05/08 |
| LCS | Aluminum | 7429-90-5 | 969.8 | 96.980 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Calcium | 7440-70-2 | 1048 | 104.800 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Iron | 7439-89-6 | 1019 | 101.900 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Potassium | 7440-09-7 | 10350 | 103.500 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Magnesium | 7439-95-4 | 979.2 | 97.920 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date:
Receive Date:

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LCS | Manganese | 7439-96-5 | 1015 | 101.500 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Sodium | 7440-23-5 | 991.9 | 99.190 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Selenium | 7782-49-2 | 997.7 | 99.770 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Inorganic

SDG Number: WSCF20080391
Matrix: WATER
Test: ICP-200.8 MS All possible meta

Sample Date: 02/20/08
Receive Date:02/20/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID: W08GR00318 | | | | | | | | | | | |
| BATCH QC ASSOCIATED WITH SAMPLE | | | | | | | | | | | |
| MS | Mercury | 7439-97-6 | 2.32 | 116.000 | % Recov | 70.000 | 130.000 | | | | 03/12/08 |
| MSD | Mercury | 7439-97-6 | 2.29 | 114.500 | % Recov | 70.000 | 130.000 | | | | 03/12/08 |
| SPK-RPD | Mercury | 7439-97-6 | 114.500 | | RPD | | | 1.302 | 20.000 | | 03/12/08 |
| BATCH QC | | | | | | | | | | | |
| BLANK | Mercury | 7439-97-6 | <5e-2 | n/a | ug/L | | | | | U | 03/12/08 |
| LCS | Mercury | 7439-97-6 | 2.31 | 115.500 | % Recov | 85.000 | 115.000 | | | | 03/12/08 |

# WSCF
# ANALYTICAL COMMENT REPORT

**Attention:** Steve Trent
**Project Number** F08-040

**Group #:** WSCF20080391
Department: Inorganic

| Sample # | Client ID | Lab Area | Test | Comment |
|---|---|---|---|---|
| | | VALGROUP | | ICP-AES: High aluminum, magnesium, and potassium preparation blank results; "C" flag if applicable. High aluminum MS recovery; "N" flag. IC Anion - MS/MSD out of limits (high) for chloride; Data N-flagged. DTS 04/16/08 |

Lab Areas: VALGROUP - Group Validation
LOGSAMP - Login for Sample
VALTEST - Test Validation
LOGTEST - Login for Tests
TESTDATA - Test Data Entry

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# WSCF
# ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent
**SAF Number:** F08-040
**Sample #** W08GR00439
**Client ID:** B1T736 TRENT WSCF

**Matrix:** WATER

**Group #:** WSCF20080391
**Department:** Radiochemistry
**Sampled:** 02/28/08
**Received:** 02/28/08

| Test Performed | CAS # | Method | RQ | Result | Unit | TP Err | Unit | DF | MDL | PQL | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gamma Energy Analysis-grd H2O** | | | | | | | | | | | |
| Cobalt-60 | 10198-40-0 | LA-508-481 | U | -0.887 | pCi/L | +-3.92 | pCi/L | 1.00 | 6.9 | | 03/03/08 |
| Cesium-137 | 10045-97-3 | LA-508-481 | U | -3.12 | pCi/L | +-4.08 | pCi/L | 1.00 | 6.8 | | 03/03/08 |
| Radium-226 | 13982-63-3 | LA-508-481 | U | -34.9 | pCi/L | +-34.9 | pCi/L | 1.00 | 31 | | 03/03/08 |
| **Gross Alpha/Gross Beta (AB32)** | | | | | | | | | | | |
| Gross alpha | 12587-46-1 | LA-508-415 | | 0.670 | pCi/L | +-0.449 | pCi/L | 1.00 | 0.59 | | 03/14/08 |
| Gross beta | 12587-47-2 | LA-508-415 | U | -0.110 | pCi/L | +-0.949 | pCi/L | 1.00 | 1.6 | | 03/14/08 |
| **TC99 by ICP-200.8 MS** | | | | | | | | | | | |
| Technetium by ICP-MS | 14133-76-7 | LA-505-412 | U | < 1.00e-03 | ug/L | | | 1.00 | 1.0e-03 | | 02/28/08 |

**MDL=Minimum Detection Limit**
**RQ=Result Qualifier**
**TP Err=Total Propagated Error**
**DF=Dilution Factor**

B - The analyte < the RDL but > = the IDL/MDL (inorg)
N - Spike sample recovery is outside control limits.(inorg)
U - Analyzed for but not detected above limiting criteria.

C - The Analyte was found in the Associated Blank.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Radiochemistry

SDG Number: WSCF20080391
Matrix: WATER
Test: Gamma Energy Analysis-grd H2O

Sample Date: 02/28/08
Receive Date:02/28/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID: W08GR00439 | | | | | | | | | | | |
| BATCH QC ASSOCIATED WITH SAMPLE | | | | | | | | | | | |
| DUP | Cobalt-60 | 10198-40-0 | U-1.906 | | RPD | | | n/a | 20.000 | | 03/04/08 |
| DUP | Cesium-137 | 10045-97-3 | U-2.743 | | RPD | | | n/a | 20.000 | | 03/04/08 |
| DUP | Radium-226 | 13982-63-3 | U-48.68 | | RPD | | | n/a | 20.000 | | 03/04/08 |
| BATCH QC | | | | | | | | | | | |
| BLANK | Cobalt-60 | 10198-40-0 | U-3.853 | n/a | pCi/L | -10.000 | 1000.000 | | | | 03/04/08 |
| BLANK | Cesium-137 | 10045-97-3 | U2.904 | n/a | pCi/L | -10.000 | 1000.000 | | | | 03/04/08 |
| BLANK | Radium-226 | 13982-63-3 | U-10.84 | n/a | pCi/L | -10.000 | 1000.000 | | | | 03/04/08 |
| LCS | Cobalt-60 | 10198-40-0 | 10260 | 103.219 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |
| LCS | Cesium-137 | 10045-97-3 | 6353 | 105.182 | % Recov | 80.000 | 120.000 | | | | 03/05/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

**Department:** Radiochemistry

SDG Number: WSCF20080391
Matrix: WATER
Test: Gross Alpha/Gross Beta (AB32)

Sample Date: 02/28/08
Receive Date:02/28/08

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID: W08GR00439 | | | | | | | | | | | |
| BATCH QC ASSOCIATED WITH SAMPLE | | | | | | | | | | | |
| DUP | Gross alpha | 12587-46-1 | U3.6E-01 | | RPD | | | n/a | 20.000 | | 03/14/08 |
| DUP | Gross beta | 12587-47-2 | 1.8E-01 | | RPD | | | n/a | 20.000 | | 03/14/08 |
| BATCH QC | | | | | | | | | | | |
| BLANK | Gross alpha | 12587-46-1 | U2.0E-03 | n/a | pCi/L | -10.000 | 10.000 | | | | 03/14/08 |
| BLANK | Gross beta | 12587-47-2 | U5.4E-02 | n/a | pCi/L | -10.000 | 10.000 | | | | 03/14/08 |
| LCS | Gross alpha | 12587-46-1 | 38.7 | 99.897 | % Recov | 80.000 | 120.000 | | | | 03/14/08 |
| LCS | Gross beta | 12587-47-2 | 127.0 | 113.191 | % Recov | 80.000 | 120.000 | | | | 03/14/08 |

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20080391
Matrix: WATER
Test: TC99 by ICP-200.8 MS

Sample Date:
Receive Date:

| QC Type | Analyte | CAS # | QC Found | QC Yield | Units | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BATCH QC | | | | | | | | | | | |
| BLANK | Technetium by ICP-MS | 14133-76-7 | <1e-3 | n/a | ug/L | | | | | U | 02/28/08 |
| LCS | Technetium by ICP-MS | 14133-76-7 | 0.14 | 97.902 | % Recov | 49.000 | 125.000 | | | | 02/28/08 |

M4W41-SLF-08-447

ATTACHMENT 4

**SAMPLE RECEIPT INFORMATION**

Consisting of 3 pages
Including cover page

**Waste Sampling and Characterization Facility**
P.O. BOX 1970 S3-30, Richland, WA 99352
PHONE: (509) 373-7004/FAX: (509) 373-7134

4/14/08
Fr/ES KB

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program

Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 122727/ES10
Group#: 20080391
Project#: F08-040
Proj Mgr: Steve Trent E6-35
Phone: 373-5869

The following samples were received from you on 02/28/08. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

| Sample# | Sample Id | Tests Scheduled | Matrix | Sample Date |
|---|---|---|---|---|
| W08GR00439 | B1T736 | TRENT<br>@2008 @AB-32 @GEA-GPP @GPP6010 @IC-30<br>@TC99-MS | Water | 02/28/08 |

Test Acronym Description

| Test Acronym | Description |
|---|---|
| @2008 | ICP-200.8 MS All possible meta |
| @AB-32 | Gross Alpha/Gross Beta (AB32) |
| @GEA-GPP | Gamma Energy Analysis-grd H2O |
| @GPP6010 | ICP Metals Analysis, Grd H20 P |
| @IC-30 | Anions by Ion Chromatography |
| @TC99-MS | TC99 screen by ICP-200.8 MS |

Fluor Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F08-040-003 | PAGE 1 OF 1

| | | | | | |
|---|---|---|---|---|---|
| COLLECTOR<br>NCO SAMPLER BAILEY | COMPANY CONTACT<br>TRENT, SJ | TELEPHONE NO.<br>373-5869 | PROJECT COORDINATOR<br>WIDRIG, DL | PRICE CODE 7N | DATA TURNAROUND<br>45 Days / 45 Days |
| SAMPLING LOCATION<br>I-33-EB /C5923 | PROJECT DESIGNATION<br>BC Cribs & Trenches - HRR QC Sampling | | SAF NO.<br>F08-040 | AIR QUALITY ☐ | |
| ICE CHEST NO. | FIELD LOGBOOK NO.<br>HNF-N-582-1 | ACTUAL SAMPLE DEPTH | COA<br>122727ES10 | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE | |
| SHIPPED TO<br>Waste Sampling & Characterization | OFFSITE PROPERTY NO.<br>N/A | | BILL OF LADING/AIR BILL NO.<br>N/A | | |

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS

SPECIAL HANDLING AND/OR STORAGE: 20080391

| PRESERVATION | HNO3 to pH <2(ULTREX) | HNO3 to pH <2 | HNO3 to pH <2 | Cool~4C |
|---|---|---|---|---|
| TYPE OF CONTAINER | G/P | G/P | Square Bottle - Poly | P |
| NO. OF CONTAINER(S) | 1 | 1 | 1 | 1 |
| VOLUME | 1L | 500mL | ~~1L~~ 500mL | 1L |
| SAMPLE ANALYSIS | Tc-99 by ICPMS (Technetium-99) | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | SEE ITEM (3) IN SPECIAL INSTRUCTIONS |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | | | | |
|---|---|---|---|---|---|---|---|
| B1T736 | WATER | 2/28/08 | 0625 | ✓ | ✓ | ✓ | ✓ |
| LOT NO. | | | | 000489 | 002759 | | 002377 |

CHAIN OF POSSESSION | SIGN/ PRINT NAMES

| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME |
|---|---|---|---|
| JK BAILEY [signature] | 2-28-08 0640 | M0745 RET #1 | 2-28-08 0640 |
| M0745 RePH1 | 2-28-08 /0 | D. Parch [signature] | 2-28-08 /030 |
| D Parch [signature] | 2-28-08 1110 | [signature] | 2/28/08 1110 |
| | | | |
| | | | |
| | | | |
| | | | |

SPECIAL INSTRUCTIONS

(1)ICP Metals - 6010B (Add-On) {Selenium} ICP Metals - 6010B (TAL) {Aluminum, Calcium, Iron, Magnesium, Manganese, Potassium, Sodium} 200.8_HG - ICPMS {Mercury}

(2)Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60} Gamma Spec - Add-on {Radium-226} Gross Alpha {Gross alpha} Gross Beta {Gross beta}

(3)IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorus in phosphate, Sulfate}

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |



A-6003-618(01/06)