

RECEIVED SEPTEMBER 09, 2009

Mission Support Alliance  
P.O. Box 650  
Richland, Washington 99352



M4W41-SLF-09-233

September 8, 2009

Mr. M. A. Neely, Manager  
Analytical Services  
CH2M HILL Plateau Remediation Contract  
PO Box 1600 MSIN R3-60  
Richland, WA 99352

Dear Mike,

FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20090842 – SAF NUMBER F09-034

- Reference(s): 1) Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, 'FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER'
- 2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following attachments for sample delivery group WSCF20090842:

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

Very truly yours,

S. L. Fitzgerald  
WSCF Analytical Lab

SLF/grf  
Attachments 4

cc: w/Attachments  
A. J. Kopriva S3-30  
H. K. Meznarich S3-30  
J. E. Trechter S3-30  
S. J. Trent R3-50  
File/LB

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M4W41-SLF-09-233

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

# WSCF SAF NUMBER CROSS REFERENCE

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Group#: WSCF20090842  
Data Deliverable Date: 03-sep-2009  
Data Deliverable: Cover Sheet

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| SAF#    | Sample ID | WSCF#      | Matrix |
|---------|-----------|------------|--------|
| F09-034 | B20YC2    | W09GR00665 | SOIL   |
|         | B20YK4    | W09GR00666 | SOIL   |

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M4W41-SLF-09-233

ATTACHMENT 2

**NARRATIVE**

Consisting of 3 pages  
Including cover page

### Introduction

Two (2) S&GRP samples were received at the WSCF Laboratory on August 27, 2009. Samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

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.

It should be noted that the attached chain of custody was NOT stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving.

The following generic data qualifiers (i.e., B, D, and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wetchem analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.

### 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

**Hexavalent Chromium** – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 15 for QC details. Analytical Note(s):

All QC controls are within the established limits.

**ICP-MS 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. See page 16 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# B21N94

- Lead – Matrix Spike and Matrix Spike Duplicate recoveries did not meet the laboratory established limit of 70% at 47.1% and 51.8% respectively. Affected sample results in this batch were N flagged.

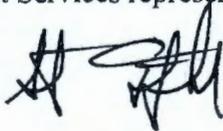
All other QC controls are within the established limits.

**Organic Comments**

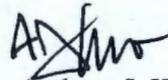
**PCB** – All results are moisture corrected and reported on a dry weight basis. The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 20 through 21 for QC details. Analytical Note(s):

All QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by the following signatures.



Scot L. Fitzgerald  
WSCF Analytical Laboratory Manager



Andrew J. Kopriva  
WSCF Client Services

M4W41-SLF-09-233

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 16 pages  
Including cover page

**WSCF  
ANALYTICAL RESULTS REPORT**

for

**Groundwater Remediation Program**

**Richland, WA 99354**

**Attention: Steve Trent**

Analytical:

*S.F. Fitzgerald 9-7-09*

Client Services:

*A. Kopriva 9-8-09*

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

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Contract#: M0A-FH-CHPRC-2008  
Report#: WSCF20090842  
Report Date: 8-sep-2009  
Report WGPP/ver. 5.2  
Groundwater Remediation Program

Department: Organic

W13q Worklist/Batch/QC Report for Group# WSCF20090842

| WL# | S# | Batch | QC#   | Tray Type | Sample#    | Test               |
|-----|----|-------|-------|-----------|------------|--------------------|
|     |    |       | 44893 | BLANK     |            | PCBs complete list |
|     |    |       | 44893 | LCS       |            | PCBs complete list |
|     |    |       | 44893 | SAMPLE    | W09GR00665 | PCBs complete list |
|     |    |       | 44893 | SURR      | W09GR00665 | PCBs complete list |
|     |    |       | 44893 | MS        | W09GR00666 | PCBs complete list |
|     |    |       | 44893 | MSD       | W09GR00666 | PCBs complete list |
|     |    |       | 44893 | SAMPLE    | W09GR00666 | PCBs complete list |
|     |    |       | 44893 | SPK-RPD   | W09GR00666 | PCBs complete list |
|     |    |       | 44893 | SURR      | W09GR00666 | PCBs complete list |

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20090842

| WL#   | S# | Batch | QC#   | Tray Type | Sample#    | Test                           |
|-------|----|-------|-------|-----------|------------|--------------------------------|
|       |    |       |       | SAMPLE    | W09GR00665 | Percent Solids                 |
|       |    |       |       | SAMPLE    | W09GR00666 | Percent Solids                 |
| 39903 | 2  | 40332 | 44889 | BLNK-PREP |            | Hexavalent chromium            |
| 39903 | 3  | 40332 | 44889 | LCS       |            | Hexavalent chromium            |
| 39903 | 5  | 40332 | 44889 | DUP       | W09GR00552 | Hexavalent chromium            |
| 39903 | 6  | 40332 | 44889 | MS        | W09GR00552 | Hexavalent chromium            |
| 39903 | 7  | 40332 | 44889 | MSD       | W09GR00552 | Hexavalent chromium            |
| 39903 | 9  | 40332 | 44889 | SPK-POST  | W09GR00552 | Hexavalent chromium            |
| 39903 | 7  | 40332 | 44889 | SPK-RPD   | W09GR00552 | Hexavalent chromium            |
| 39903 | 16 | 40332 | 44889 | SAMPLE    | W09GR00665 | Hexavalent chromium            |
| 39903 | 17 | 40332 | 44889 | SAMPLE    | W09GR00666 | Hexavalent chromium            |
| 39904 | 1  | 40333 | 44890 | BLANK     |            | ICP-200.8 MS All possible meta |
| 39904 | 2  | 40333 | 44890 | LCS       |            | ICP-200.8 MS All possible meta |
| 39904 | 7  | 40333 | 44890 | MS        | W09GR00564 | ICP-200.8 MS All possible meta |
| 39904 | 8  | 40333 | 44890 | MSD       | W09GR00564 | ICP-200.8 MS All possible meta |
| 39904 | 8  | 40333 | 44890 | SPK-RPD   | W09GR00564 | ICP-200.8 MS All possible meta |
| 39904 | 12 | 40333 | 44890 | SAMPLE    | W09GR00665 | ICP-200.8 MS All possible meta |
| 39904 | 13 | 40333 | 44890 | SAMPLE    | W09GR00666 | ICP-200.8 MS All possible meta |

# 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.

|                   |  |
|-------------------|--|
| <b>LA-265-403</b> | <b>LA-265-403: Hexavalent Chromium analysis by Spectrophotometer</b><br>EPA SW-846 7196A                      HEXAVALENT CHROMIUM<br>HEIS 7196_CR6                              Hexavalent Chromium  |
| <b>LA-505-412</b> | <b>LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY</b><br>EPA-600/R-94-111 200.8              DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS<br>HEIS 200.8 METALS_ICPMS      Inductively Coupled Plasma - Mass Spectrometry<br>HEIS RADISOTOPES_ICPMS      Radioisotopes by ICP/MS |
| <b>LA-519-412</b> | <b>LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C</b><br>EPA-600/4-79-020 160.1              Residual, Filterable<br>EPA-600/4-79-020 160.3              RESIDUE, TOTAL<br>HEIS 160.1_TDS                        Residual, Filterable<br>Standard Methods 2540B              Total Solids Dried at 103-105 C                                |

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>.

Report Date: 8-sep-2009  
Report#: WSCF20090842  
Report WGPPM/5.2

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Page 2

# WSCF

## METHOD REFERENCES REPORT

Department: Organic

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.

|                         |   |
|-------------------------|---|
| <b>LA-523-427</b>       | <b>LA-523-427: POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY</b> |
| <b>EPA SW-846 3510C</b> | SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION                                |
| <b>EPA SW-846 3545</b>  | PRESSURIZED FLUID EXTRACTION (PFE)  |
| <b>EPA SW-846 3665A</b> | SULFURIC ACID/PERMANGANATE CLEANUP  |
| <b>EPA SW-846 8000B</b> | DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS                                 |
| <b>EPA SW-846 8082A</b> | POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY                    |
| <b>HEIS 8082_PCB_GC</b> | Polychlorinated Biphenyls (PCBs) by Gas 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>.

Report Date: 8-sep-2009  
Report#: WSCF20090842  
Report WGPPM/5.2

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# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F09-034  
**Sample #** W09GR00665  
**Client ID:** B20YC2

**GPP** TRENT  
**WSCF**

**Matrix:** SOIL

**Group #:** WSCF20090842  
**Department:** Inorganic  
**Sampled:** 08/12/09  
**Received:** 08/27/09

| Test Performed                             | CAS #      | Method     | RQ | Result   | Unit    | TP Err | Unit | DF   | MDL    | PQL | Analysis Date   |
|--|------------|------------|----|----------|---------|--------|------|------|--------|-----|-----------------|
| <b>Hexavalent Chromium Prep</b>            |            |            |    |          |         |        |      |      |        |     | <b>09/02/09</b> |
| <b>Hexavalent Chromium</b>                 |            |            |    |          |         |        |      |      |        |     |                 |
| Hexavalent Chromium                        | 18540-29-9 | LA-265-403 | U  | < 0.300  | mg/kg   |        |      | 1.00 | 0.30   |     | 09/02/09        |
| <b>ICP-200.8 MS All possible meta Prep</b> |            |            |    |          |         |        |      |      |        |     | <b>09/01/09</b> |
| <b>ICP-200.8 MS All possible meta</b>      |            |            |    |          |         |        |      |      |        |     |                 |
| Lead                                       | 7439-92-1  | LA-505-412 | N  | 2.49     | mg/kg   |        |      | 0.85 | 0.0851 |     | 09/02/09        |
| Mercury                                    | 7439-97-6  | LA-505-412 | U  | < 0.0426 | mg/kg   |        |      | 0.85 | 0.0426 |     | 09/02/09        |
| <b>Total solids</b>                        |            |            |    |          |         |        |      |      |        |     |                 |
| Total solids                               | TS         | LA-519-412 |    | 91.6     | Percent |        |      | 1.00 | 0.0    |     | 09/02/09        |

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

N - Spike sample recovery is outside control limits.(inorg)  
 U - Analyzed for but not detected above limiting criteria.(org)

U - Analyzed for but not detected above limiting criteria(inorg)

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

Report WGPP/ver. 5.2  
 Groundwater Remediation Program

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F09-034  
**Sample #** W09GR00666  
**Client ID:** B20YK4

**GPP** TRENT  
**WSCF**

**Matrix:** SOIL

**Group #:** WSCF20090842  
**Department:** Inorganic  
**Sampled:** 08/12/09  
**Received:** 08/27/09

| Test Performed                             | CAS #      | Method     | RQ | Result   | Unit    | TP Err | Unit | DF   | MDL    | PQL | Analysis Date |
|--|------------|------------|----|----------|---------|--------|------|------|--------|-----|---------------|
| <b>Hexavalent Chromium Prep</b>            |            |            |    |          |         |        |      |      |        |     |               |
| <b>Hexavalent Chromium</b>                 |            |            |    |          |         |        |      |      |        |     |               |
| Hexavalent Chromium                        | 18540-29-9 | LA-265-403 | U  | < 0.300  | mg/kg   |        |      | 1.00 | 0.30   |     | 09/02/09      |
| <b>ICP-200.8 MS All possible meta Prep</b> |            |            |    |          |         |        |      |      |        |     |               |
| <b>ICP-200.8 MS All possible meta</b>      |            |            |    |          |         |        |      |      |        |     |               |
| Lead                                       | 7439-92-1  | LA-505-412 | N  | 1.51     | mg/kg   |        |      | 0.98 | 0.0961 |     | 09/02/09      |
| Mercury                                    | 7439-97-8  | LA-505-412 | U  | < 0.0481 | mg/kg   |        |      | 0.98 | 0.0481 |     | 09/02/09      |
| <b>Total solids</b>                        |            |            |    |          |         |        |      |      |        |     |               |
| Total solids                               | TS         | LA-519-412 |    | 94.9     | Percent |        |      | 1.00 | 0.0    |     | 09/01/09      |

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

N - Spike sample recovery is outside control limits.(inorg)

U - Analyzed for but not detected above limiting criteria.(org)

U - Analyzed for but not detected above limiting criteria(inorg)

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

Report WGPP/ver. 5.2

Groundwater Remediation Program

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20090842  
 Matrix: SOLID  
 Test: Hexavalent chromium

Sample Date: 08/07/09  
 Receive Date: 08/07/09

| QC Type                                | Analyte             | CAS #      | QC Found | QC Yield | Units   | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|--|---------------------|------------|----------|----------|---------|-------------|-------------|--------|-----------|----|---------------|
| <b>Lab ID: W09GR00552</b>              |                     |            |          |          |         |             |             |        |           |    |               |
| <b>BATCH QC ASSOCIATED WITH SAMPLE</b> |                     |            |          |          |         |             |             |        |           |    |               |
| DUP                                    | Hexavalent chromium | 18540-29-9 | < 0.30   |          | RPD     |             |             | n/a    | 15.000    | U  | 09/02/09      |
| MS                                     | Hexavalent chromium | 18540-29-9 | 285      | 85.075   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| MS                                     | Hexavalent chromium | 18540-29-9 | 36.7     | 84.368   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| MSD                                    | Hexavalent chromium | 18540-29-9 | 39.0     | 85.339   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| SPK-POST                               | Hexavalent chromium | 18540-29-9 | 0.0522   | 97.753   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| SPK-RPD                                | Hexavalent chromium | 18540-29-9 | 85.339   |          | RPD     |             |             | 1.144  | 20.000    |    | 09/02/09      |
| <b>BATCH QC</b>                        |                     |            |          |          |         |             |             |        |           |    |               |
| BLNK-PREP                              | Hexavalent chromium | 18540-29-9 | < 0.30   | n/a      | ug/g    | 0.000       | 2.000       |        |           | U  | 09/02/09      |
| LCS                                    | Hexavalent chromium | 18540-29-9 | 18.6     | 93.000   | % Recov | 80.000      | 120.000     |        |           |    | 09/02/09      |

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20090842  
 Matrix: SOLID  
 Test: ICP-200.8 MS All possible meta

Sample Date: 08/20/09  
 Receive Date: 08/20/09

| QC Type                                | Analyte | CAS #     | QC Found | QC Yield | Units   | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|--|---------|-----------|----------|----------|---------|-------------|-------------|--------|-----------|----|---------------|
| <b>Lab ID: W09GR00564</b>              |         |           |          |          |         |             |             |        |           |    |               |
| <b>BATCH QC ASSOCIATED WITH SAMPLE</b> |         |           |          |          |         |             |             |        |           |    |               |
| MS                                     | Mercury | 7439-97-6 | 0.89     | 89.000   | % Recov | 70.000      | 130.000     |        |           |    | 09/02/09      |
| MS                                     | Lead    | 7439-92-1 | 47.11    | 47.110   | % Recov | 70.000      | 130.000     |        |           | •  | 09/02/09      |
| MSD                                    | Mercury | 7439-97-6 | 1.05     | 105.000  | % Recov | 70.000      | 130.000     |        |           |    | 09/02/09      |
| MSD                                    | Lead    | 7439-92-1 | 51.76    | 51.760   | % Recov | 70.000      | 130.000     |        |           | •  | 09/02/09      |
| SPK-RPD                                | Mercury | 7439-97-6 | 105.000  |          | RPD     |             |             | 16.495 | 20.000    |    | 09/02/09      |
| SPK-RPD                                | Lead    | 7439-92-1 | 51.760   |          | RPD     |             |             | 9.406  | 20.000    |    | 09/02/09      |
| <b>BATCH QC</b>                        |         |           |          |          |         |             |             |        |           |    |               |
| BLANK                                  | Mercury | 7439-97-6 | <5e-2    | n/a      | ug/L    |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Lead    | 7439-92-1 | <0.1     | n/a      | ug/L    |             |             |        |           | U  | 09/02/09      |
| LCS                                    | Mercury | 7439-97-6 | 8.25     | 99.638   | % Recov | 72.000      | 117.000     |        |           |    | 09/02/09      |
| LCS                                    | Lead    | 7439-92-1 | 143.9    | 110.692  | % Recov | 77.000      | 125.000     |        |           |    | 09/02/09      |

# WSCF ANALYTICAL COMMENT REPORT

**Attention:** Steve Trent  
**Project Number** F09-034

**Group #:** WSCF20090842  
**Department:** Inorganic

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| Sample # | Client ID | Lab Area | Test | Comment |
|----------|-----------|----------|------|---------|
|----------|-----------|----------|------|---------|

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VALGROUP

PCB: All results are moisture corrected and reported on a weight. cgc

ICP-MS: Lead spike recovery 47%. "N" Flag

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**Lab Areas:** VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

# WSCF

## ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F09-034  
**Sample #** W09GR00665  
**Client ID:** B20YC2

**GPP** TRENT  
**WSCF**

**Matrix:** SOIL

**Group #:** WSCF20090842  
**Department:** Organic  
**Sampled:** 08/12/09  
**Received:** 08/27/09

| Test Performed                 | CAS #      | Method     | RQ | Result | Unit  | TP Err | Unit | DF   | MDL | PQL | Analysis Date |
|--------------------------------|------------|------------|----|--------|-------|--------|------|------|-----|-----|---------------|
| <b>PCBs complete list Prep</b> |            |            |    |        |       |        |      |      |     |     |               |
| <b>PCBs complete list</b>      |            |            |    |        |       |        |      |      |     |     |               |
| Aroclor-1016                   | 12674-11-2 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1221                   | 11104-28-2 | LA-523-427 | U  | < 35.0 | ug/kg |        |      | 1.00 | 35  |     | 09/02/09      |
| Aroclor-1232                   | 11141-16-5 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1242                   | 53469-21-9 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1248                   | 12672-29-6 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1254                   | 11097-69-1 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1260                   | 11096-82-5 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1262                   | 37324-23-5 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |
| Aroclor-1268                   | 11100-14-4 | LA-523-427 | U  | < 17.0 | ug/kg |        |      | 1.00 | 17  |     | 09/02/09      |

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

N - Spike sample recovery is outside control limits.(inorg)  
 U - Analyzed for but not detected above limiting criteria.(org)

U - Analyzed for but not detected above limiting criteria(inorg)

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

Report WGPP/ver. 5.2  
 Groundwater Remediation Program



# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090842  
 Matrix: SOLID  
 Test: PCBs complete list

Sample Date: 08/12/09  
 Receive Date: 08/27/09

| QC Type                                | Analyte              | CAS #      | QC Found | QC Yield | Units   | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|--|----------------------|------------|----------|----------|---------|-------------|-------------|--------|-----------|----|---------------|
| <b>Lab ID: W09GR00665</b>              |                      |            |          |          |         |             |             |        |           |    |               |
| <b>BATCH QC ASSOCIATED WITH SAMPLE</b> |                      |            |          |          |         |             |             |        |           |    |               |
| SURR                                   | Decachlorobiphenyl   | 2051-24-3  | 348.26   | 101.000  | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| SURR                                   | Tetrachloro-m-xylene | 877-09-8   | 324.32   | 94.000   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| <b>Lab ID: W09GR00666</b>              |                      |            |          |          |         |             |             |        |           |    |               |
| <b>BATCH QC ASSOCIATED WITH SAMPLE</b> |                      |            |          |          |         |             |             |        |           |    |               |
| MS                                     | Aroclor-1260         | 11096-82-5 | 160.56   | 87.000   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| MS                                     | Decachlorobiphenyl   | 2051-24-3  | 166.20   | 90.100   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| MS                                     | Tetrachloro-m-xylene | 877-09-8   | 150.75   | 81.700   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| MSD                                    | Aroclor-1260         | 11096-82-5 | 198.99   | 96.600   | % Recov | 75.000      | 125.000     |        |           |    | 09/02/09      |
| MSD                                    | Decachlorobiphenyl   | 2051-24-3  | 208.32   | 101.000  | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| MSD                                    | Tetrachloro-m-xylene | 877-09-8   | 186.79   | 90.700   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| SPK-RPD                                | Aroclor-1260         | 11096-82-5 | 96.600   |          | RPD     |             |             | 10.458 | 25.000    |    | 09/02/09      |
| SPK-RPD                                | Decachlorobiphenyl   | 2051-24-3  | 101.000  |          | RPD     |             |             | 11.408 | 20.000    |    | 09/02/09      |
| SPK-RPD                                | Tetrachloro-m-xylene | 877-09-8   | 90.700   |          | RPD     |             |             | 10.441 | 20.000    |    | 09/02/09      |
| SURR                                   | Decachlorobiphenyl   | 2051-24-3  | 179.86   | 90.700   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| SURR                                   | Tetrachloro-m-xylene | 877-09-8   | 181.31   | 91.400   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| <b>BATCH QC</b>                        |                      |            |          |          |         |             |             |        |           |    |               |
| BLANK                                  | Aroclor-1016         | 12674-11-2 | < 2.0    | n/a      | UGKG    |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1221         | 11104-28-2 | < 4.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1232         | 11141-16-5 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1242         | 53489-21-9 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1248         | 12672-29-6 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1254         | 11097-69-1 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1260         | 11096-82-5 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK                                  | Aroclor-1262         | 37324-23-5 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20090842  
 Matrix: SOLID  
 Test: PCBs complete list

Sample Date:  
 Receive Date:

| QC Type | Analyte              | CAS #      | QC Found | QC Yield | Units   | Lower Limit | Upper Limit | RPD(%) | RPD Limit | RQ | Analysis Date |
|---------|----------------------|------------|----------|----------|---------|-------------|-------------|--------|-----------|----|---------------|
| BLANK   | Aroclor-1268         | 11100-14-4 | < 2.0    | n/a      | ug/Kg   |             |             |        |           | U  | 09/02/09      |
| BLANK   | Decachlorobiphenyl   | 2051-24-3  | 35.472   | 88.700   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| BLANK   | Tetrachloro-m-xylene | 877-09-8   | 32.221   | 80.600   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| LCS     | Aroclor-1260         | 11096-82-5 | 174.02   | 87.000   | % Recov | 70.000      | 130.000     |        |           |    | 09/02/09      |
| LCS     | Decachlorobiphenyl   | 2051-24-3  | 184.95   | 92.500   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |
| LCS     | Tetrachloro-m-xylene | 877-09-8   | 191.25   | 95.600   | % Recov | 50.000      | 150.000     |        |           |    | 09/02/09      |

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F09-034

Group #: WSCF20090842  
Department: Organic

---

| Sample # | Client ID | Lab Area | Test | Comment |
|----------|-----------|----------|------|---------|
|----------|-----------|----------|------|---------|

---

VALGROUP

PCB: All results are moisture corrected and reported on a weight. cgc

ICP-MS: Lead spike recovery 47%. "N" Flag

---

Lab Areas: VALGROUP - Group Validation  
LOGSAMP - Login for Sample

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

wgppc/5.2 Report#: WSCF20090842

Report Date: 8-sep-2009

Page 1

M4W41-SLF-09-233

ATTACHMENT 4

**SAMPLE RECEIPT INFORMATION**

Consisting of 4 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

*File # 3*  
*9/11/09*

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program

Richland, WA 99354  
Attn: Steve Trent

Customer Code: GPP  
PO#: 301411/ES10  
Group#: 20090842  
Project#: F09-034  
Proj Mgr: STEVE TRENT  
Phone: 373-5869

The following samples were received from you on 08/27/09. 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 |
|------------|-----------|-----------------|---|-------------|
| W09GR00665 | B20YC2    | GPP<br>@2008    | TRENT Solid, or handle as if solid<br>@PCBGPP CR+6 PERSOLID | 08/12/09    |
| W09GR00666 | B20YK4    | GPP<br>@2008    | TRENT Solid, or handle as if solid<br>@PCBGPP CR+6 PERSOLID | 08/12/09    |

Test Acronym Description

| Test Acronym | Description                                     |
|--------------|---|
| @2008        | ICP-200.8 MS All possible meta - <i>Pb 4 Ho</i> |
| @PCBGPP      | PCBs complete list                              |
| CR+6         | Hexavalent chromium                             |
| PERSOLID     | Percent Solids                                  |

COLLECTOR

*D Sparks*

SAMPLING LOCATION

Composite; ZONE 6

ICE CHEST NO.

*CAVS- 113*

SHIPPED TO

Waste Sampling & Characterization

MATRIX\*

- A=Air
- DL=Drum
- Liquids
- DS=Drum
- Solids
- L=Liquid
- O=Oil
- S=Soil
- SE=Sediment
- T=Tissue
- V=Vegetation
- W=Water
- WI=Wipe
- X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS

Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

RADIOACTIVE TIE TO: B20YB6

*20090842*

COMPANY CONTACT

WIDRIG, DL

TELEPHONE NO.

376-2858

PROJECT COORDINATOR

WIDRIG, DL

PROJECT DESIGNATION

UPR-100-K-1 In-Process Sampling and Analysis

SAF NO.

F09-034

FIELD LOGBOOK NO.

*MPF N-507-7*

ACTUAL SAMPLE DEPTH

*1-2'*

OFFSITE PROPERTY NO.

N/A

COA

301411ES10

BILL OF LADING/AIR BILL NO.

N/A

PRICE CODE

88

AIR QUALITY

METHOD OF SHIPMENT

GOVERNMENT VEHICLE

DATA TURNAROUND

7 Days / 15 Days

PRESERVATION

None Cool-4C Cool-4C

TYPE OF CONTAINER

G/P G/P aG

NO. OF CONTAINER(S)

1 1 1

VOLUME

120ml 60ml 250ml

SAMPLE ANALYSIS

SEE ITEM (1) IN SPECIAL INSTRUCTIONS Chromium Hex - 7196; PCBs - 8082 (Arochlor 1254, Arochlor-1260)

SAMPLE NO.

MATRIX\*

SAMPLE DATE

SAMPLE TIME

B20YC2 *LV 096200665* SOIL

*8-12-09 1300*

|          |          |          |           |           |
|----------|----------|----------|-----------|-----------|
| <i>1</i> | <i>1</i> | <i>1</i> | <i>NA</i> | <i>NA</i> |
|----------|----------|----------|-----------|-----------|

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

*D Sparks* *8-12-09 1515*

*8-12-09 1515*

*MD-413 550-R1 1515*

*8-12-09*

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

*MD 413 D Parthen 550-R1* *8-27-09*

*8-27-09*

*D Parthen*

*8-27-09*

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

*D Parthen* *8-27-09*

*8-27-09*

*TA FRAZIER* *8/27/09 0810*

*8/27/09 0810*

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

\*\* The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  \*\* The laboratories must meet prior requested and confirmed turnaround times and RDLs. The laboratories must notify the SM Project Coordinator in writing if/when this requirement can not be met. \*\* The laboratories must meet prior requested and confirmed turnaround times and RDLs. The laboratories must notify the SM Project Coordinator in writing if/when this requirement can not be met.   
(1)ICP/MS - 200.8 (Add-on) {Lead} 200.8\_HG - ICPMS (Mercury)

*8-12-09*

*[Signature]*

25 of 26

LABORATORY SECTION

RECEIVED BY

TITLE

DATE/TIME

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD

DISPOSED BY

DATE/TIME

COLLECTOR *Rosanne Rod Sparks*

COMPANY CONTACT  
WIDRIG, DL

TELEPHONE NO.  
376-2858

PROJECT COORDINATOR  
WIDRIG, DL

PRICE CODE 88

DATA  
TURNAROUND

SAMPLING LOCATION  
Discrete; (DEEP) ZONE 4

PROJECT DESIGNATION  
UPR-100-K-1 In-Process Sampling and Analysis

SAF NO.  
F09-034

AIR QUALITY

7 Days / 15  
Days

ICE CHEST NO.  
*QWS-113*

FIELD LOGBOOK NO. *HNF-N-507-7* ACTUAL SAMPLE DEPTH *8'-9'*

COA  
301411ES10

METHOD OF SHIPMENT  
GOVERNMENT VEHICLE

SHIPPED TO  
Waste Sampling & Characterization

OFFSITE PROPERTY NO.  
N/A

BILL OF LADING/AIR BILL NO.  
N/A

MATRIX\* POSSIBLE SAMPLE HAZARDS/ REMARKS  
A=Air Contains Radioactive Material at concentrations  
DL=Drum that may or may not be regulated for  
Liquids transportation per 49 CFR / IATA Dangerous  
DS=Drum Goods Regulations but are not releasable per  
Solids DOE Order 5400.5 (1990/1993)  
L=Liquid  
O=Oil  
S=Soil  
SE=Sediment  
T=Tissue  
V=Vegetation  
W=Water  
WI=Wipe  
X=Other

PRESERVATION None Cool~4C Cool~4C

TYPE OF CONTAINER G/P G/P aG

NO. OF CONTAINER(S) 1 1 1

VOLUME 120mL 60mL 250mL

SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS Chromium Hex - 7196; PCBs - 8082 (Aroclor-1254, Aroclor-1260)

SPECIAL HANDLING AND/OR STORAGE  
RADIOACTIVE TIE TO: B20YCG

| SAMPLE NO.        | MATRIX* | SAMPLE DATE | SAMPLE TIME |   |   |   |  |  |  |  |  |
|-------------------|---------|-------------|-------------|---|---|---|--|--|--|--|--|
| B20YK4 1109600666 | SOIL    | 8-12-09     | 1115        | ✓ | ✓ | ✓ |  |  |  |  |  |

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

|  |                           |  |                           |
|--|---------------------------|--|---------------------------|
| RELINQUISHED BY/REMOVED FROM<br><i>Larry Rosanne Spang Rosanne</i> | DATE/TIME<br>8-12-09 1515 | RECEIVED BY/STORED IN<br>M0-413 554 RL | DATE/TIME<br>8-27-09      |
| RELINQUISHED BY/REMOVED FROM<br><i>D. Frazier</i>                  | DATE/TIME<br>8-27-09      | RECEIVED BY/STORED IN<br>TA FRAZIEIL   | DATE/TIME<br>8/27/09 0810 |
| RELINQUISHED BY/REMOVED FROM                                       | DATE/TIME                 | RECEIVED BY/STORED IN                  | DATE/TIME                 |
| RELINQUISHED BY/REMOVED FROM                                       | DATE/TIME                 | RECEIVED BY/STORED IN                  | DATE/TIME                 |
| RELINQUISHED BY/REMOVED FROM                                       | DATE/TIME                 | RECEIVED BY/STORED IN                  | DATE/TIME                 |

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26 of 26  
LABORATORY SECTION  
FINAL SAMPLE DISPOSITION

RECEIVED BY  
DISPOSAL METHOD

TITLE  
DISPOSED BY

DATE/TIME  
DATE/TIME