

RECEIVED AUGUST 18, 2008

0079871

Fluor Hanford  
WSCF Analytical Lab  
P.O. Box 1000  
Richland, WA 99352  
Telephone 373-7495  
Telefax 372-0456

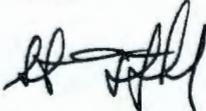
**FLUOR**

---

**Memorandum**

---

To: H. Hampt E6-35 Date: M4W41-SLF-08-840 August 18, 2008

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

cc: w/Attachments

T. F. Dale	S3-30	P. D. Mix	S3-30
D. Felmy (PNNL)	K6-75	J. E. Trechter	S3-30
A. J. Kopriva	S3-30	S. J. Trent	E6-35
H. K. Meznarich	S3-30	File/LB	

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20081737

Reference: 1) Letter of Instruction for Analytical Services for the Groundwater Performance Assessment Project and Analytical Laboratory Transition Plan, FH-0602422, September 19, 2006

2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This transmittal contains the following information for sample delivery group WSCF20081737:

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

SLF/grf

Attachments 4

**RECEIVED**  
JAN 14 2009  
**EDMC**

**M4W41-SLF-08-840**

**ATTACHMENT 1**

**COVER SHEET**

**Consisting of 2 pages  
Including cover page**

# WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20081737  
Data Deliverable Date: 14-aug-2008  
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I08-051	B1WD27	W08P003955	WATER
	B1WD30	W08P003956	WATER
	B1WD47	W08P003957	WATER
	B1WD49	W08P003958	WATER
	B1WD58	W08P003959	WATER
	B1WDD2	W08P003953	WATER
I08-055	B1WFX1	W08P003960	WATER
	B1WFX3	W08P003961	WATER

M4W41-SLF-08-840

ATTACHMENT 2

**NARRATIVE**

Consisting of 2 pages  
Including cover page

### Introduction

Eight groundwater samples were received at the WSCF Laboratory on August 13, 2008. Samples were 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.

It should be noted that the attached chain of custody was stamped “ICED” by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

### Analytical Methodology for Requested Analyses

Refer to WSCF Method References Report, page 8, for a complete listing of approved analytical methods.

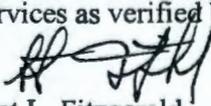
### Inorganic Comments

**Hexavalent Chromium** – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See page 18 for QC details. Analytical note(s):

- Sample results were D flagged if dilution(s) were required.
- Duplicates and Matrix Spikes were analyzed on samples B1WCY8 and B1WD97 (SDG# 20081734).
- Matrix Spike (B1WCY8) recovery was less than established laboratory limits due to high sample concentration. Sample concentration was significantly greater than the spike concentration. No flags issued.

All other 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

  
Pauline D. Mix  
WSCF Client Services

M4W41-SLF-08-840

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 13 pages  
Including cover page

**WSCF**  
**ANALYTICAL RESULTS REPORT**

for

**GPAP**  
**Richland, WA 99352**

**Attention: Steve Trent E6-35**

Analytical:

*S. Fitzgerald 8/10/08*

Client Services:

*P.D. Myers 8/16/2008*

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

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

Report#: WSCF20081737  
Report Date: 14-aug-2008  
Report WGPP/ver. 5.2  
GPAP

Page 1

# 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>
<b>EPA SW-846 7196A</b>	<b>HEXAVALENT CHROMIUM</b>
<b>HEIS 7196_CR6</b>	<b>Hexavalent Chromium</b>

---

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: 14-aug-2008

Report#: WSCF20081737

Report WGPPM/5.2

## W13q Worklist/Batch/QC Report for Group# WSCF20081737

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37579	2	38019	42365	BLANK		Hexavalent chromium
37579	15	38019	42365	BLANK		Hexavalent chromium
37579	27	38019	42365	BLANK		Hexavalent chromium
37579	40	38019	42365	BLANK		Hexavalent chromium
37579	47	38019	42365	BLANK		Hexavalent chromium
37579	3	38019	42365	LCS		Hexavalent chromium
37579	5	38019	42365	DUP	W08P003924	Hexavalent chromium
37579	6	38019	42365	MS	W08P003924	Hexavalent chromium
37579	30	38019	42365	DUP	W08P003944	Hexavalent chromium
37579	31	38019	42365	MS	W08P003944	Hexavalent chromium
37579	38	38019	42365	SAMPLE	W08P003953	Hexavalent chromium
37579	39	38019	42365	SAMPLE	W08P003955	Hexavalent chromium
37579	41	38019	42365	SAMPLE	W08P003956	Hexavalent chromium
37579	42	38019	42365	SAMPLE	W08P003957	Hexavalent chromium
37579	43	38019	42365	SAMPLE	W08P003958	Hexavalent chromium
37579	44	38019	42365	SAMPLE	W08P003959	Hexavalent chromium
37579	45	38019	42365	SAMPLE	W08P003960	Hexavalent chromium
37579	46	38019	42365	SAMPLE	W08P003961	Hexavalent chromium

# WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-051

Sample # W08P003953

Client ID: B1WDD2 GPP-PNNL TRENT

Matrix: WATER

Group #: WSCF20081737

Department: Inorganic

Sampled: 08/13/08

Received: 08/13/08

WSCF

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	U	< 2.00e-03	mg/L			1.00	2.0e-03		08/13/08

MDL = Minimum Detection Limit      U - Analyzed for but not detected above limiting criteria (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-051

Sample # W08P003955

Client ID: B1WD27 GPP-PNNL TRENT

WSCF

Matrix: WATER

Group #: WSCF20081737

Department: Inorganic

Sampled: 08/13/08

Received: 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Hexavalent Chromium</b>											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0158	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit** U - Analyzed for but not detected above limiting criteria(inorg)

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-051

Sample # W08P003956

Client ID: B1WD30 GPP-PNNL TRENT

Matrix: WATER

Group #: WSCF20081737

Department: Inorganic

Sampled: 08/13/08

Received: 08/13/08

WSCF

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Hexavalent Chromium</b>											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0352	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit**

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

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-051  
**Sample #** W08P003957  
**Client ID:** B1WD47

GPP-PNNL TRENT  
 WSCF

**Matrix:** WATER

**Group #:** WSCF20081737  
**Department:** Inorganic  
**Sampled:** 08/13/08  
**Received:** 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium	18540-29-9	LA-265-403		0.0504	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit** U - Analyzed for but not detected above limiting criteria(inorg)

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-051  
**Sample #** W08P003958  
**Client ID:** B1WD49

**Group #:** WSCF20081737  
**Department:** Inorganic  
**Sampled:** 08/13/08  
**Received:** 08/13/08

**GPP-PNNL TRENT**      **Matrix:** WATER  
**WSCF**

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Hexavalent Chromium</b>											
Hexavalent Chromium	18540-29-9	LA-265-403		0.432	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit**      U - Analyzed for but not detected above limiting criteria(inorg)

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35

**SAF Number:** I08-051

**Sample #** W08P003959

**Client ID:** B1WD58 GPP-PNNL TRENT

WSCF

**Matrix:** WATER

**Group #:** WSCF20081737

**Department:** Inorganic

**Sampled:** 08/13/08

**Received:** 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Hexavalent Chromium</b>											
Hexavalent Chromium	18540-29-9	LA-265-403		0.172	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit**

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

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

\* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent E6-35  
**SAF Number:** I08-055  
**Sample #** W08P003960  
**Client ID:** B1WFX1

GPP-PNNL TRENT  
 WSCF

**Matrix:** WATER

**Group #:** WSCF20081737  
**Department:** Inorganic  
**Sampled:** 08/13/08  
**Received:** 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium	18540-29-9	LA-265-403		3.60e-03	mg/L			1.00	2.0e-03		08/13/08

**MDL = Minimum Detection Limit** U - Analyzed for but not detected above limiting criteria(inorg)

**RQ = Result Qualifier**

**TP Err = Total Propagated Error**

**DF = Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF

## ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-055

Sample # W08P003961

Client ID: B1WFX3 GPP-PNNL TRENT

WSCF

Matrix: WATER

Group #: WSCF20081737

Department: Inorganic

Sampled: 08/13/08

Received: 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Hexavalent Chromium</b>											
Hexavalent Chromium	18540-29-9	LA-265-403		0.156	mg/L			1.00	2.0e-03		08/13/08

**MDL=Minimum Detection Limit**

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

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

Report WGPP/ver. 5.2

GPAP

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081737  
 Matrix: WATER  
 Test: Hexavalent chromium

Sample Date: 08/13/08  
 Receive Date: 08/13/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P003924</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Hexavalent chromium	18540-29-9	0.3903		RPD			1.323	15.000		08/13/08
MS	Hexavalent chromium	18540-29-9	0.0013	3.250	% Recov	85.000	115.000				08/13/08
<b>Lab ID: W08P003944</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Hexavalent chromium	18540-29-9	0.0199		RPD			0.501	15.000		08/13/08
MS	Hexavalent chromium	18540-29-9	0.0403	100.750	% Recov	85.000	115.000				08/13/08
<b>BATCH QC</b>											
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	08/13/08
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	08/13/08
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	08/13/08
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	08/13/08
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	08/13/08
LCS	Hexavalent chromium	18540-29-9	0.0513	102.600	% Recov	80.000	120.000				08/13/08

M4W41-SLF-08-840

ATTACHMENT 4

**SAMPLE RECEIPT INFORMATION**

Consisting of 10 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*  
8/14/08

ACKNOWLEDGMENT OF SAMPLES RECEIVED



GPAP

Richland, WA 99352  
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP  
PO#: 122543  
Group#: 20081737

The following samples were received from you on 08/13/08. 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
8P003953	B1WDD2	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003955	B1WD27	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003956	B1WD30	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003957	B1WD47	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003958	B1WD49	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003959	B1WD58	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003960	B1WFX1	GPP-PNNL CR+6	TRENT Water	08/13/08
8P003961	B1WFX3	GPP-PNNL CR+6	TRENT Water	08/13/08

Test Acronym Description

Test Acronym	Description
CR+6	Hexavalent chromium















