

RECEIVED NOVEMBER 5, 2008

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

**FLUOR**<sup>®</sup>

M4W41-SLF-08-1219

November 5, 2008

Mr. M. A. Neely, Manager  
 CH2M HILL  
 Plateau Remediation Contract  
 1933 Jadwin MSIN B6-06  
 Richland, WA 99352

Dear Mike:

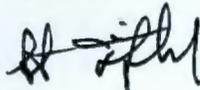
FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20082030 – SAF NUMBER F08-148

- Reference: (1) Memorandum of Agreement #MOA-FH-CHPRC-2008, Rev. 0, for the Performance & Payment of Services, dated October 1, 2008
- (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 WSCF20082030:

- Cover Sheet (Attachment 1)
- Narrative (Attachment 2)
- Analytical Results (Attachment 3)
- Sample Receipt Information (Attachment 4)
- Sample Record Sheet (Attachment 5)

SLF/grf



Attachments 5

cc: w/Attachments

T. F. Dale	S3-30	J. E. Trechter	S3-30
A. J. Kopriva	S3-30	S. J. Trent	B6-06
H. K. Meznarich	S3-30	File/LB	
P. D. Mix	S3-30		

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M4W41-SLF-08-1219

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

## WSCF SAF NUMBER CROSS REFERENCE

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Group#: WSCF20082030  
Data Deliverable Date: 05-nov-2008  
Data Deliverable: Cover Sheet

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SAF#	Sample ID	WSCF#	Matrix
F08-148	B1WMY5	W08GR03797	SOIL
	B1WMY7	W08GR03795	SOIL

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M4W41-SLF-08-1219

ATTACHMENT 2

**NARRATIVE**

Consisting of 5 pages  
Including cover page

### Introduction

Three (3) S&GRP samples were received at the WSCF Laboratory on September 21, 2008. Two of the three samples were analyzed at the WSCF Laboratory. Summary of sample disposition is offered below:

- B1WMY5, and B1WMY7 – Samples were successfully analyzed at the WSCF Laboratory for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Memorandum of Agreement (MOA-FH-CHPRC-2008, Rev.0)*, referenced in the cover letter.
- B1WMY6 – Analysis of this Methanol Blank sample and the associated high concentration VOA sample was not required.

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. Additionally, copies of the sample record sheets are included as Attachment 5.

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*, pages 14 through 16, for a complete listing of approved analytical methods.

**Anions** – Hold 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. See page 18 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.
- Sample results that were less than 5X the method detection limit, however greater than the method detection limit were B flagged.
- Matrix Spike, Matrix Spike Duplicate and Sample Duplicate analyzed on sample B1WMY7 (SDG 20082030, SAF# F08-148).

All QC controls are within the established limits.

**Hexavalent Chromium** – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 19 for QC details. Analytical Note(s):

- Duplicate, Matrix Spike, Matrix Spike Duplicate were analyzed on sample# B1 WMY4 (SDG# 20082029, SAF# F08-148).
- QC Sample B1 WMY4: The Matrix Spike and Matrix Spike Duplicate recovery did not meet the laboratory established required of 75% at 70.7% and 74.4% respectively.
- All other QC controls are within the established limits.

**ICP-AES Metals** – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 20 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.
- Sample results that were less than 5x the method detection limit, however greater than the method detection limit were B flagged.
- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1 WMJ3 (SDG# 20081975, SAF# F08-148)
- Iron – Sample concentrations exceeded spiking levels by a factor of 4. Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Spike recoveries are not valid.
- Check standard was analyzed to ensure linearity, because the sample results exceeded the calibration standard.

All other 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 21 for QC details. Analytical Note(s):

- Matrix Spike, Matrix Spike Duplicate and Sample Duplicate analyzed on sample B1 WMJ0 (SDG 20081975, SAF F08-148).
- Chromium and Manganese – RPD values did not meet the laboratory established limit. The MS/MSD and LCS percent recoveries for these analytes met the laboratory established limit. The data were accepted based on the acceptable spike recoveries. In addition, the non-homogenous nature of soil may have affected the RPD value.

All other QC controls are within the established limits.

**Total Solids** – analyzed for organic moisture correction.

**Organic Comments**

**TPHD-WA** – 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 25 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WMY4, SDG 20082029, SAF# F08-148).

All QC controls are within the established limits.

**VOA ANALYSIS** – 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 26 through 27 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WMY5, SDG 20082030, SAF# F08-148).

All QC controls are within the established limits.

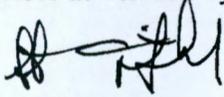
**Radiochemistry Comments**

**Rad Chem** – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike (*Matrix Spikes apply only to Neptunium, Technetium & Tritium and Matrix Spike Duplicate applies to Neptunium*), Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 30 through 32 for QC details. Analytical Note(s):

- Sr89/90: Duplicate was analyzed on sample# B1WMK2 (SDG# 20082024, SAF# F08-148).
- Tc-99: Matrix Spike and Duplicate was analyzed on sample# B1WPP3 (SDG# 20082022, SAF# F08-147).
- Uranium Isotopic Analysis: Duplicate was analyzed on sample# B1WMK2 (SDG# 20082024 SAF# F08-148).
- Uranium Isotopic Analysis (QC Batch B1WMK2): The Duplicate RPD value for U-234 and U-235 did not meet the established limit for the laboratory. The sample is a low level sample and RPD values do not apply to low level samples. In addition, we attributed the difference in the duplicate results to the non-homogenous nature of soil.

All other QC controls are within the established limits.

I certify that this data package is in compliance with the MOA, 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



Andrew J. Kopriva  
WSCF Client Services

M4W41-SLF-08-1219

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 25 pages  
Including cover page

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

for

**Groundwater Remediation Program**

**Richland, WA 99354**

**Attention: Steve Trent**

Analytical:

*S.F. Fitzgerald 11/5/08*

Client Services:

*A. Kapriva 11/5/08*

*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#: WSCF20082030  
Report Date: 4-nov-2008  
Report WGPP/ver. 5.2  
Groundwater Remediation Program

Department: Inorganic

## W13q Worklist/Batch/QC Report for Group# WSCF20082030

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W08GR03795	Percent Solids
38273	2	38694	43131	BLNK-PREP		Hexavalent chromium
38273	3	38694	43131	LCS		Hexavalent chromium
38273	5	38694	43131	DUP	W08GR03793	Hexavalent chromium
38273	6	38694	43131	MS	W08GR03793	Hexavalent chromium
38273	7	38694	43131	MSD	W08GR03793	Hexavalent chromium
38273	8	38694	43131	SPK-POST	W08GR03793	Hexavalent chromium
38273	7	38694	43131	SPK-RPD	W08GR03793	Hexavalent chromium
38273	15	38694	43131	SAMPLE	W08GR03795	Hexavalent chromium
38302	1	38722	43155	BLANK		ICP-200.8 MS All possible meta
38302	2	38722	43155	LCS		ICP-200.8 MS All possible meta
38302	4	38722	43155	MS	W08GR03700	ICP-200.8 MS All possible meta
38302	5	38722	43155	MSD	W08GR03700	ICP-200.8 MS All possible meta
38302	5	38722	43155	SPK-RPD	W08GR03700	ICP-200.8 MS All possible meta
38302	14	38722	43155	SAMPLE	W08GR03795	ICP-200.8 MS All possible meta
38298	1	38718	43192	BLANK		ICP Metals Analysis, Grd H20 P
38298	2	38718	43192	LCS		ICP Metals Analysis, Grd H20 P
38298	4	38718	43192	MS	W08GR03701	ICP Metals Analysis, Grd H20 P
38298	5	38718	43192	MSD	W08GR03701	ICP Metals Analysis, Grd H20 P
38298	5	38718	43192	SPK-RPD	W08GR03701	ICP Metals Analysis, Grd H20 P
38298	12	38718	43192	SAMPLE	W08GR03795	ICP Metals Analysis, Grd H20 P
38411	2	38833	43303	BLANK		Anions by Ion Chromatography
38411	11	38833	43303	BLANK		Anions by Ion Chromatography
38411	3	38833	43303	LCS		Anions by Ion Chromatography
38411	5	38833	43303	DUP	W08GR03795	Anions by Ion Chromatography
38411	6	38833	43303	MS	W08GR03795	Anions by Ion Chromatography
38411	7	38833	43303	MSD	W08GR03795	Anions by Ion Chromatography
38411	4	38833	43303	SAMPLE	W08GR03795	Anions by Ion Chromatography
38411	7	38833	43303	SPK-RPD	W08GR03795	Anions by Ion Chromatography

Department: Organic

## W13q Worklist/Batch/QC Report for Group# WSCF20082030

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			43158	BLANK		VOA Ground Water Protection
			43158	LCS		VOA Ground Water Protection
			43158	MS	W08GR03797	VOA Ground Water Protection
			43158	MSD	W08GR03797	VOA Ground Water Protection
			43158	SAMPLE	W08GR03797	VOA Ground Water Protection
			43158	SPK-RPD	W08GR03797	VOA Ground Water Protection
			43158	SURR	W08GR03797	VOA Ground Water Protection
			43343	BLANK		NWTPH-D TPH Diesel Range (Wa)
			43343	LCS		NWTPH-D TPH Diesel Range (Wa)
			43343	MS	W08GR03793	NWTPH-D TPH Diesel Range (Wa)
			43343	MSD	W08GR03793	NWTPH-D TPH Diesel Range (Wa)
			43343	SPK-RPD	W08GR03793	NWTPH-D TPH Diesel Range (Wa)
			43343	SAMPLE	W08GR03795	NWTPH-D TPH Diesel Range (Wa)
			43343	SURR	W08GR03795	NWTPH-D TPH Diesel Range (Wa)

## W13q Worklist/Batch/QC Report for Group# WSCF20082030

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
38162	1	38589	43199	BLANK		TC99 by Liquid Scin.
38162	2	38589	43199	LCS		TC99 by Liquid Scin.
38162	4	38589	43199	DUP	W08GR03785	TC99 by Liquid Scin.
38162	3	38589	43199	MS	W08GR03785	TC99 by Liquid Scin.
38162	11	38589	43199	SAMPLE	W08GR03795	TC99 by Liquid Scin.
38278	1	38699	43211	BLANK		Strontium 89/90
38278	2	38699	43211	LCS		Strontium 89/90
38278	3	38699	43211	DUP	W08GR03788	Strontium 89/90
38278	12	38699	43211	SAMPLE	W08GR03795	Strontium 89/90
38278	13	38699	43211	SURR	W08GR03795	Strontium 89/90
38456	1	38877	43378	BLANK		Uranium Isotopics by AEA
38456	2	38877	43378	LCS		Uranium Isotopics by AEA
38456	3	38877	43378	DUP	W08GR03788	Uranium Isotopics by AEA
38456	12	38877	43378	SAMPLE	W08GR03795	Uranium Isotopics by AEA
38456	13	38877	43378	SURR	W08GR03795	Uranium Isotopics by AEA

# 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> EPA SW-846 7196A                      HEXAVALENT CHROMIUM HEIS 7196_CR6                          Hexavalent Chromium
<b>LA-505-411</b>	<b>LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE</b> HEIS 6010_METALS_ICP              Inductively Coupled Plasma-Atomic Emission Spectrometry
<b>LA-505-412</b>	<b>LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY</b> 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
<b>LA-519-412</b>	<b>LA-519-412: TOTAL RESIDUE/% SOLIDS DRIED AT 103 - 105 C</b> EPA-600/4-79-020 160.1              Residual, Filterable EPA-600/4-79-020 160.3              RESIDUE, TOTAL HEIS 160.1_TDS                        Residual, Filterable Standard Methods 2540B              Total Solids Dried at 103-105 C
<b>LA-533-410</b>	<b>LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY</b> 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: 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.

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<b>LA-523-455</b>	<b>LA-523-455: VOLATILE SAMPLE ANALYSIS BY SW-846</b>
	<b>EPA SW-846 8000B</b> DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS
	<b>EPA SW-846 8260B</b> VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)
	<b>HEIS 8260_VOA_GCMS</b> Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
<b>LA-523-493</b>	<b>NWTPH-Diesel and/or Gasoline</b>
	<b>HEIS WTPH_DIESEL (HEIS)</b> Total Petroleum Hydrocarbons in Diesel
	<b>WDOE TPHD</b> Total Petroleum Hydrocarbons in Diesel

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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.

<b>LA-508-415</b>	<b>LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS</b>
<b>HEIS ALPHA_GPC</b>	<b>GROSS ALPHA GPC</b>
<b>HEIS BETA_GPC</b>	<b>GROSS BETA GPC</b>
<b>HEIS SRTOT_SEP_PRECIP_GPC</b>	<b>Plutonium 89/90</b>
<b>LA-508-421</b>	<b>LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER</b>
<b>HEIS ALPHA_LSC</b>	<b>A/B Liquid Scintillation</b>
<b>HEIS BETA_LSC</b>	<b>A/B Liquid Scintillation</b>
<b>HEIS TC99_3MDSK_LSC</b>	<b>TC99 by Liquid Scintillation</b>
<b>HEIS TRITIUM_EIE_LSC</b>	<b>Tritium Liquid Scintillation</b>
<b>LA-508-471</b>	<b>LA-508-471: ALPHA ENERGY ANALYZER DATA ACQUISITION AND SYSTEM CHECKOUT USING ALP</b>
<b>HEIS PUIISO_IE_PRECIP_AEA</b>	<b>Plutonium by Alpha Energy Analysis</b>
<b>HEIS RAISO_AEA</b>	<b>Radium-226</b>

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

Report Date: 4-nov-2008

Report#: WSCF20082030

Report WGPMM/5.2

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# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F08-148  
**Sample #** W08GR03795  
**Client ID:** B1WMY7

**GPP** TRENT  
**WSCF**

**Matrix:** SOIL

**Group #:** WSCF20082030  
**Department:** Inorganic  
**Sampled:** 09/20/08  
**Received:** 09/21/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Anions by Ion Chromatography Prep</b>											
<b>Anions by Ion Chromatography</b>											
Nitrogen in Nitrate	NO3-N	LA-533-410	BD	1.03	mg/kg			50.00	0.25		10/13/08
<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		10/02/08
<b>ICP Metals Analysis, Grd H2O P Prep</b>											
<b>ICP Metals Analysis, Grd H2O P</b>											
Iron	7439-89-6	LA-505-411		6.73e +03	mg/kg			1.01e +002	2.5		10/06/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Manganese	7439-96-5	LA-505-412		191	mg/kg			0.97	0.0969		10/01/08
Chromium	7440-47-3	LA-505-412		11.6	mg/kg			0.97	0.484		10/01/08
Arsenic	7440-38-2	LA-505-412		1.27	mg/kg			0.97	0.387		10/01/08
<b>Total solids</b>											
Total solids	TS	LA-519-412		81.8	Percent			1.00	0.0		09/29/08

**MDL=Minimum Detection Limit**

**RQ=Result Qualifier**

**TP Err=Total Propagated Error**

**DF=Dilution Factor**

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

B - The analyte < the RDL but > = the IDL/MDL (inorg)

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

D - Analyte was identified at a secondary dilution factor

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

Report WGPP/ver. 5.2

Groundwater Remediation Program

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: Anions by Ion Chromatography

Sample Date: 09/20/08  
 Receive Date: 09/21/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03795</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Nitrogen in Nitrate	NO3-N	0.967		RPD			6.523	20.000		10/13/08
MS	Nitrogen in Nitrate	NO3-N	0.431572	95.905	% Recov	80.000	120.000				10/13/08
MSD	Nitrogen in Nitrate	NO3-N	0.418664	93.036	% Recov	80.000	120.000				10/13/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	93.036		RPD			3.037	20.000		10/13/08
<b>BATCH QC</b>											
BLANK	Nitrogen in Nitrate	NO3-N	<5e-3	n/a	mg/L	0.000	0.040			U	10/13/08
BLANK	Nitrogen in Nitrate	NO3-N	<5e-3	n/a	mg/L	0.000	0.040			U	10/13/08
LCS	Nitrogen in Nitrate	NO3-N	92.642	103.050	% Recov	80.000	120.000				10/13/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: Hexavalent chromium

Sample Date: 09/19/08  
 Receive Date: 09/21/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03793</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Hexavalent chromium	18540-29-9	< 0.3		RPD			n/a	15.000	U	10/02/08
MS	Hexavalent chromium	18540-29-9	336	82.759	% Recov	75.000	125.000				10/02/08
MS	Hexavalent chromium	18540-29-9	13.61	70.701	% Recov	75.000	125.000			*	10/02/08
MSD	Hexavalent chromium	18540-29-9	14.30	74.363	% Recov	75.000	125.000			*	10/02/08
SPK-POST	Hexavalent chromium	18540-29-9	0.0548	102.622	% Recov	75.000	125.000				10/02/08
SPK-RPD	Hexavalent chromium	18540-29-9	74.363		RPD			5.049	20.000		10/02/08
<b>BATCH QC</b>											
BLNK-PREP	Hexavalent chromium	18540-29-9	< 0.3	n/a	ug/g	0.000	2.000			U	10/02/08
LCS	Hexavalent chromium	18540-29-9	16.42	86.878	% Recov	80.000	120.000				10/02/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 09/11/08  
 Receive Date: 09/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
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Lab ID: W08GR03701  
**BATCH QC ASSOCIATED WITH SAMPLE**

MS	Iron	7439-89-6	4201	4180.100	% Recov	75.000	125.000				10/06/08
MSD	Iron	7439-89-6	4021	3993.049	% Recov	75.000	125.000				10/06/08
SPK-RPD	Iron	7439-89-6	3993.049		RPD			4.577	20.000		10/06/08

**BATCH QC**

BLANK	Iron	7439-89-6	<2.5e-2	n/a	ug/mL					U	10/06/08
LCS	Iron	7439-89-6	15050	80.481	% Recov	47.000	152.000				10/06/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: ICP-200.8 MS All possible meta

Sample Date: 09/11/08  
 Receive Date: 09/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03700</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Arsenic	7440-38-2	173.72	86.860	% Recov	70.000	130.000				10/01/08
MS	Chromium	7440-47-3	217.04	108.520	% Recov	70.000	130.000				10/01/08
MS	Manganese	7439-96-5	147.4	73.700	% Recov	70.000	130.000				10/01/08
MSD	Arsenic	7440-38-2	175.12	87.560	% Recov	70.000	130.000				10/01/08
MSD	Chromium	7440-47-3	156.74	78.370	% Recov	70.000	130.000				10/01/08
MSD	Manganese	7439-96-5	181.5	90.750	% Recov	70.000	130.000				10/01/08
SPK-RPD	Arsenic	7440-38-2	87.560		RPD			0.803	20.000		10/01/08
SPK-RPD	Chromium	7440-47-3	78.370		RPD			32.265	20.000 *		10/01/08
SPK-RPD	Manganese	7439-96-5	90.750		RPD			20.736	20.000 *		10/01/08
<b>BATCH QC</b>											
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	10/01/08
BLANK	Chromium	7440-47-3	<0.5	n/a	ug/L					U	10/01/08
BLANK	Manganese	7439-96-5	<0.1	n/a	ug/L					U	10/01/08
LCS	Arsenic	7440-38-2	118.9	90.076	% Recov	75.000	134.000				10/01/08
LCS	Chromium	7440-47-3	59.31	81.358	% Recov	77.000	125.000				10/01/08
LCS	Manganese	7439-96-5	392.4	86.623	% Recov	83.000	118.000				10/01/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-148

Group #: WSCF20082030  
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-MS: Spike recovery RPDs over 20% on Chromium and Manganese. % Recoveries all acceptable. Soils often have poor RPDs due to small sample size and homogeneity problems</p> <p>ICP-AES: [Samples W08GR3795] Iron sample result exceeds spiking level by a factor of 4 so spike recoveries are not valid. High standard used to ensure iron linearity because sample result is greater than the calibration standards.</p> <p>ORGANICS: Sample concentrations corrected for moisture and reported dry weight basis. gar</p> <p>W08GR03788/U-234 RPD does not apply to results near the MDC.</p>

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:** F08-148  
**Sample #** W08GR03795  
**Client ID:** B1WMY7

**Group #:** WSCF20082030  
**Department:** Organic  
**Sampled:** 09/20/08  
**Received:** 09/21/08

**GPP**      **TRENT**      **Matrix:**    **SOIL**  
**WSCF**

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>NWTPH-D TPH Diesel Range (Wa) Prep</b>											
<b>NWTPH-D TPH Diesel Range (Wa)</b>											
Total Pet. Hydrocarbons Diesel	TPHDIESEL	LA-523-493	U	< 3.60e+03	ug/kg			1.00	3.6e+03		10/09/08
Kerosene	TPHKEROSENE	LA-523-493	U	< 3.60e+03	ug/kg			1.00	3.6e+03		10/09/08

**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)

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

D - Analyte was identified at a secondary dilution factor

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

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

Report WGPP/ver. 5.2

Groundwater Remediation Program

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# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F08-148  
**Sample #** W08GR03797  
**Client ID:** B1WMY5

**GPP** TRENT  
**WSCF**

**Matrix:** SOIL

**Group #:** WSCF20082030  
**Department:** Organic  
**Sampled:** 09/20/08  
**Received:** 09/21/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>VOA Ground Water Protection</b>											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.10	ug/kg			1.00	1.1		10/01/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.10	ug/kg			1.00	1.1		10/01/08
Benzene	71-43-2	LA-523-455	U	< 1.10	ug/kg			1.00	1.1		10/01/08
Toluene	108-88-3	LA-523-455	U	< 1.10	ug/kg			1.00	1.1		10/01/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.10	ug/kg			1.00	1.1		10/01/08

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

D - Analyte was identified at a secondary dilution factor  
 U - Analyzed for but not detected above limiting criteria.(org)

\* - 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: WSCF20082030  
 Matrix: SOLID  
 Test: NWTPH-D TPH Diesel Range (Wa)

Sample Date: 09/19/08  
 Receive Date: 09/21/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03793</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	ortho-Terphenyl	Surr	84-15-1	21135	98.500	% Recov	70.000	130.000			10/09/08
MS	Total Pet. Hydrocarbons Diesel		TPHDIESEL	113740	106.000	% Recov	75.000	125.000			10/09/08
MSD	ortho-Terphenyl	Surr	84-15-1	19595	92.400	% Recov	70.000	130.000			10/09/08
MSD	Total Pet. Hydrocarbons Diesel		TPHDIESEL	102840	97.000	% Recov	75.000	125.000			10/09/08
SPK-RPD	ortho-Terphenyl	Surr	84-15-1	92.400		RPD			6.391	20.000	10/09/08
SPK-RPD	Total Pet. Hydrocarbons Diesel		TPHDIESEL	97.000		RPD			8.867	20.000	10/09/08
<b>Lab ID: W08GR03795</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	ortho-Terphenyl	Surr	84-15-1	23049	96.200	% Recov	70.000	130.000			10/09/08
<b>BATCH QC</b>											
BLANK	Kerosene		TPHKEROSENE	< 3000	n/a	ug/Kg				U	10/09/08
BLANK	ortho-Terphenyl	Surr	84-15-1	17021	85.100	% Recov	70.000	130.000			10/09/08
BLANK	Total Pet. Hydrocarbons Diesel		TPHDIESEL	< 3000	n/a	ug/Kg				U	10/09/08
LCS	ortho-Terphenyl	Surr	84-15-1	17453	87.300	% Recov	70.000	130.000			10/09/08
LCS	Total Pet. Hydrocarbons Diesel		TPHDIESEL	91975	92.000	% Recov	80.000	120.000			10/09/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: VOA Ground Water Protection

Sample Date: 09/20/08  
 Receive Date: 09/21/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03797</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	1,1-Dichloroethene	75-35-4	24.210	99.800	% Recov	63.000	117.000				10/01/08
MS	Benzene	71-43-2	22.340	92.100	% Recov	75.000	129.000				10/01/08
MS	4-Bromofluorobenzene(Surr)	480-00-4	46.720	96.300	% Recov	75.000	125.000				10/01/08
MS	Chlorobenzene	108-90-7	23.000	94.800	% Recov	79.000	119.000				10/01/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	51.690	107.000	% Recov	75.000	125.000				10/01/08
MS	Toluene-d8(Surr)	2037-26-5	46.030	94.900	% Recov	75.000	125.000				10/01/08
MS	Toluene	108-88-3	22.410	92.400	% Recov	76.000	120.000				10/01/08
MS	Trichloroethene	79-01-6	19.850	81.800	% Recov	73.000	123.000				10/01/08
MSD	1,1-Dichloroethene	75-35-4	23.810	91.900	% Recov	63.000	117.000				10/01/08
MSD	Benzene	71-43-2	24.120	93.100	% Recov	75.000	129.000				10/01/08
MSD	4-Bromofluorobenzene(Surr)	480-00-4	49.910	96.400	% Recov	75.000	125.000				10/01/08
MSD	Chlorobenzene	108-90-7	24.890	96.100	% Recov	79.000	119.000				10/01/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.110	106.000	% Recov	75.000	125.000				10/01/08
MSD	Toluene-d8(Surr)	2037-26-5	49.160	94.900	% Recov	75.000	125.000				10/01/08
MSD	Toluene	108-88-3	24.080	93.000	% Recov	76.000	120.000				10/01/08
MSD	Trichloroethene	79-01-6	21.060	81.300	% Recov	73.000	123.000				10/01/08
SPK-RPD	1,1-Dichloroethene	75-35-4	91.900		RPD			8.242	20.000		10/01/08
SPK-RPD	Benzene	71-43-2	93.100		RPD			1.080	20.000		10/01/08
SPK-RPD	4-Bromofluorobenzene(Surr)	480-00-4	96.400		RPD			0.104	20.000		10/01/08
SPK-RPD	Chlorobenzene	108-90-7	96.100		RPD			1.362	20.000		10/01/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	106.000		RPD			0.939	20.000		10/01/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	94.900		RPD			0.000	20.000		10/01/08
SPK-RPD	Toluene	108-88-3	93.000		RPD			0.647	20.000		10/01/08
SPK-RPD	Trichloroethene	79-01-6	81.300		RPD			0.613	20.000		10/01/08
SURR	4-Bromofluorobenzene(Surr)	480-00-4	53.160	97.400	% Recov	75.000	125.000				10/01/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	58.210	107.000	% Recov	75.000	125.000				10/01/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: VOA Ground Water Protection

Sample Date: 09/20/08  
 Receive Date: 09/21/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SURR	Toluene-d8(Surr)	2037-26-5	51.830	95.000	% Recov	80.000	126.000				10/01/08
<b>BATCH QC</b>											
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	10/01/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	10/01/08
BLANK	4-Bromofluorobenzene(Surr)	460-00-4	49.330	98.700	% Recov	75.000	125.000				10/01/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	10/01/08
BLANK	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.210	106.000	% Recov	75.000	125.000				10/01/08
BLANK	Toluene-d8(Surr)	2037-26-5	47.640	95.300	% Recov	75.000	125.000				10/01/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	10/01/08
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	10/01/08
LCS	1,1-Dichloroethene	75-35-4	21.110	84.400	% Recov	75.000	125.000				10/02/08
LCS	Benzene	71-43-2	23.800	95.200	% Recov	75.000	125.000				10/02/08
LCS	4-Bromofluorobenzene(Surr)	460-00-4	47.870	95.700	% Recov	75.000	125.000				10/02/08
LCS	Chlorobenzene	108-90-7	24.720	98.900	% Recov	75.000	125.000				10/02/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	51.880	104.000	% Recov	75.000	125.000				10/02/08
LCS	Toluene-d8(Surr)	2037-26-5	47.280	94.600	% Recov	75.000	125.000				10/02/08
LCS	Toluene	108-88-3	23.650	94.600	% Recov	75.000	125.000				10/02/08
LCS	Trichloroethene	79-01-6	20.520	82.100	% Recov	75.000	125.000				10/02/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-148

Group #: WSCF20082030  
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-MS: Spike recovery RPDs over 20% on Chromium and Manganese. % Recoveries all acceptable. Soils often have poor RPDs due to small sample size and homogeneity problems</p> <p>ICP-AES: [Samples W08GR3795] Iron sample result exceeds spiking level by a factor of 4 so spike recoveries are not valid. High standard used to ensure iron linearity because sample result is greater than the calibration standards.</p> <p>ORGANICS: Sample concentrations corrected for moisture and reported dry weight basis. gar</p> <p>W08GR03788/U-234 RPD does not apply to results near the MDC.</p>

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:** F08-148  
**Sample #** W08GR03795  
**Client ID:** B1WMY7

**Group #:** WSCF20082030  
**Department:** Radiochemistry  
**Sampled:** 09/20/08  
**Received:** 09/21/08

**GPP**      **TRENT**  
**WSCF**      **Matrix: SOIL**

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>Strontium 89/90</b>											
Strontium-89/90	SR-RAD	LA-508-415	U	-0.460	pCi/g	+ -0.662	pCi/g	1.00	0.38		10/02/08
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		76.9	Percent			1.00	0.0		10/02/08
<b>TC99 by Liquid Scin.</b>											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421	U	0.0300	pCi/g	+ -0.152	pCi/g	1.00	0.30		10/06/08
<b>Uranium Isotopics by AEA</b>											
Uranium-233/234	U-233/234	LA-508-471		0.140	pCi/g	+ -0.0462	pCi/g	1.00	0.010		10/23/08
Uranium-235	15117-96-1	LA-508-471		9.20e-03	pCi/g	+ -7.91e-03	pCi/g	1.00	4.2e-03		10/23/08
Uranium-238	U-238	LA-508-471		0.130	pCi/g	+ -0.0429	pCi/g	1.00	0.010		10/23/08
U-232 tracer by AEA	U232	LA-508-471		3.10	pCi/g			1.00	0.018		10/23/08

**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)

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

D - Analyte was identified at a secondary dilution factor

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

\* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

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Groundwater Remediation Program

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: Strontium 89/90

Sample Date: 09/19/08  
 Receive Date: 09/19/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03788</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Sr-85 Tracer by Beta Counting	SR85	90.4	90.400	% Recov	30.000	105.000				10/02/08
DUP	Strontium-89/90	SR-RAD	U1.5E-01		RPD			n/a	20.000		10/02/08
<b>Lab ID: W08GR03795</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	Sr-85 Tracer by Beta Counting	SR85	76.9	76.900	% Recov	30.000	105.000				10/02/08
<b>BATCH QC</b>											
BLANK	Sr-85 Tracer by Beta Counting	SR85	89.3	89.300	% Recov	30.000	105.000				10/02/08
BLANK	Strontium-89/90	10098-97-2	U-6.3E-01	n/a	pCi/g	-10.000	300.000				10/02/08
LCS	Sr-85 Tracer by Beta Counting	SR85	88	88.000	% Recov	30.000	105.000				10/02/08
LCS	Strontium-89/90	10098-97-2	69.9	100.691	% Recov	80.000	120.000				10/02/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: TC99 by Liquid Scin.

Sample Date: 09/18/08  
 Receive Date: 09/19/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03785</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Tc-99 by Liquid Scin.	14133-76-7	U3.2E-02		RPD			n/a	20.000		10/06/08
MS	Tc-99 by Liquid Scin.	14133-76-7	18.929	96.331	% Recov	75.000	125.000				10/06/08
<b>BATCH QC</b>											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U3.3E-02	n/a	pCi/g	-10.000	1000.000				10/06/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	6.6	85.714	% Recov	80.000	120.000				10/06/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082030  
 Matrix: SOLID  
 Test: Uranium Isotopics by AEA

Sample Date: 09/19/08  
 Receive Date: 09/19/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03788</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	U-232 tracer by AEA	U232	3.358	98.860	% Recov	30.000	105.000				10/23/08
DUP	Uranium-233/234	U-233/234	7.2e-2		RPD			32.558	20.000 *		10/23/08
DUP	Uranium-235	15117-96-1	U4.7e-3		RPD			n/a	20.000		10/23/08
DUP	Uranium-238	U-238	7.2e-2		RPD			57.426	20.000 *		10/23/08
<b>Lab ID: W08GR03795</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	U-232 tracer by AEA	U232	3.068	87.230	% Recov	30.000	105.000				10/23/08
<b>BATCH QC</b>											
BLANK	U-232 tracer by AEA	U232	3.743	87.970	% Recov	30.000	105.000				10/23/08
BLANK	Uranium-233/234	13966-29-5	2e-2	0.020	pCi/g	-10.000	1000.000				10/23/08
BLANK	Uranium-235	15117-96-1	9.8e-3	0.010	pCi/g	-10.000	1000.000				10/23/08
BLANK	Uranium-238	24678-82-8	U1.8e-3	n/a	pCi/g	-10.000	1000.000				10/23/08
LCS	U-232 tracer by AEA	U232	11.42	84.350	% Recov	30.000	105.000				10/23/08
LCS	Uranium-233/234	13966-29-5	n/a	n/a	% Recov	75.000	125.000				10/23/08
LCS	Uranium-235	15117-96-1	n/a	n/a	% Recov	75.000	125.000				10/23/08
LCS	Uranium-238	24678-82-8	20.06	105.830	% Recov	80.000	120.000				10/23/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-148

Group #: WSCF20082030  
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-MS: Spike recovery RPDs over 20% on Chromium and Manganese. % Recoveries all acceptable. Soils often have poor RPDs due to small sample size and homogeneity problems</p> <p>ICP-AES: [Samples W08GR3795] Iron sample result exceeds spiking level by a factor of 4 so spike recoveries are not valid. High standard used to ensure iron linearity because sample result is greater than the calibration standards.</p> <p>ORGANICS: Sample concentrations corrected for moisture and reported dry weight basis. gar</p> <p>W08GR03788/U-234 RPD does not apply to results near the MDC.</p>

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

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

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M4W41-SLF-08-1219

ATTACHMENT 4

**SAMPLE RECEIPT INFORMATION**

Consisting of 5 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*  
*V/B*  
11/05/08

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program

Richland, WA 99354  
Attn: Steve Trent

Customer Code: GPP  
PO#: 123630/ES10  
Group#: 20082030  
Project#: F08-148  
Proj Mgr: Steve Trent E6-35  
Phone: 373-5869

The following samples were received from you on 09/21/08. 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
W08GR03795	B1WMY7	GPP @2008 @TC99-30	TRENT Solid, or handle as if solid @AEA-32 @GPP6010 @IC-30 @SR89_90 @TPHD-WA CR+6 PERSOLID	09/20/08
W08GR03797	B1WMY5	GPP @VOA-GPP	TRENT Solid, or handle as if solid	09/20/08
W08GR03798	B1WMY6	GPP @VOA-GPP	TRENT Solid, or handle as if solid	09/20/08

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@AEA-32	Uranium Isotopics by AEA
@GPP6010	ICP Metals Analysis, Grd H2O P
@IC-30	Anions by Ion Chromatography
@SR89_90	Strontium 89/90
@TC99-30	TC99 by Liquid Scin.
@TPHD-WA	NWTPH-D TPH Diesel Range (Wa)
@VOA-GPP	VOA Ground Water Protection
CR+6	Hexavalent chromium
PERSOLID	Percent Solids

<b>COLLECTOR</b> Cano	<b>COMPANY CONTACT</b> TRENT, SJ	<b>TELEPHONE NO.</b> 373-5870	<b>PROJECT COORDINATOR</b> WIDRIG, DL	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> C7016 T-007	<b>PROJECT DESIGNATION</b> K-West Characterization - Groundwater Contacted Sediments		<b>SAF NO.</b> F08-148	<b>AIR QUALITY</b> <input type="checkbox"/>	
<b>ICE CHEST NO.</b>	<b>FIELD LOGBOOK NO.</b> HNK-N-585-10	<b>ACTUAL SAMPLE DEPTH</b> 92.1'	<b>COA</b> 123630ES10	<b>METHOD OF SHIPMENT</b> GOVERNMENT VEHICLE	
<b>SHIPPED TO</b> Waste Sampling & Characterization	<b>OFFSITE PROPERTY NO.</b>		<b>BILL OF LADING/AIR BILL NO.</b>		

<b>MATRIX*</b> 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	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> 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)	<b>PRESERVATION</b>	Cool-4C	None	Cool-4C	Cool-4C	None		
		<b>TYPE OF CONTAINER</b>	aG	G/P	G/P	G/P	Square Bottle - Poly		
		<b>NO. OF CONTAINER(S)</b>	1	1	1	1	1		
		<b>VOLUME</b>	120ml	250mL	500mL	120mL	500mL		
		<b>SPECIAL HANDLING AND/OR STORAGE</b> 20082030	<b>SAMPLE ANALYSIS</b>	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196	IC Arsenic - 300.0 Nitrogen in Nitrate	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B1WMY7	SOIL	9/20/08	1045	✓	✓	✓	✓	✓
				/	-	/	/	/

<b>CHAIN OF POSSESSION</b>	<b>SIGN/ PRINT NAMES</b>	<b>SPECIAL INSTRUCTIONS</b>
RELINQUISHED BY/REMOVED FROM <i>P. L. ...</i>	DATE/TIME 9/20/08 1315	RECEIVED BY/STORED IN <i>no 415 ref 2</i>
RELINQUISHED BY/REMOVED FROM <i>Mo 413 Fridge</i>	DATE/TIME 9-21-08 0923	RECEIVED BY/STORED IN <i>Chilton/Duff</i>
RELINQUISHED BY/REMOVED FROM <i>C. Fulton</i>	DATE/TIME 9-21-08 09:00	RECEIVED BY/STORED IN <i>V. ...</i>
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN

(1)TPH-DieselKerosene Range - WTPH-D {Total petroleum hydrocarbons - kerosene range}  
 (2)ICP/MS - 200.8 (TAL) {Chromium, Manganese} ICP/MS - 200.8 (Add-on) {Arsenic} ICP Metals - 6010B (TAL) {Iron}  
 (3)Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238} Strontium-89,90 -- Total Sr; Technetium-99;

<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>

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<b>COLLECTOR</b> Cane	<b>COMPANY CONTACT</b> TRENT, SJ	<b>TELEPHONE NO.</b> 373-5870	<b>PROJECT COORDINATOR</b> WIDRIG, DL	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> C7016 I-007	<b>PROJECT DESIGNATION</b> K-West Characterization - Groundwater Contacted Sediments		<b>SAF NO.</b> F08-148	<b>AIR QUALITY</b> <input type="checkbox"/>	
<b>ICE CHEST NO.</b>	<b>FIELD LOGBOOK NO.</b> HNF-N.585-10	<b>ACTUAL SAMPLE DEPTH</b> 92.1'	<b>COA</b> 123630E510	<b>METHOD OF SHIPMENT</b> GOVERNMENT VEHICLE	
<b>SHIPPED TO</b> Waste Sampling & Characterization	<b>OFFSITE PROPERTY NO.</b>		<b>BILL OF LADING/AIR BILL NO.</b>		

<b>MATRIX*</b> 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	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> 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)	<b>PRESERVATION</b>	Cool <-7C and >-20C	MEOH/Cool~4 C									
		<b>TYPE OF CONTAINER</b>	aGs*	aGs*									
		<b>NO. OF CONTAINER(S)</b>	5	3									
		<b>VOLUME</b>	40mL	40mL									
		<b>SPECIAL HANDLING AND/OR STORAGE</b>	<b>SAMPLE ANALYSIS</b>	VDA - 5035/8260 (LOW LEVEL) (Trichloroethene)	VDA - 5035/8260 (HIGH LEVEL) (Trichloroethene)								

7312110

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME								
B1WMY5	W0861203797 SOIL	9/20/08	1045	✓	✓						

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS Half in Freeze 1/2 in Ref 2
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
Cane	9/20/08 13:15	Mo 413 Rut 2	9/21/08 13:15	
Mo 413 Fridge	9-21-08 0923	C. Fulton	9-21-08 0923	
C. Fulton	9-21-08 0923	Vita Sims	9/21/08 0923	

<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>

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<b>COLLECTOR</b> Cano	<b>COMPANY CONTACT</b> TRENT, SJ	<b>TELEPHONE NO.</b> 373-5870	<b>PROJECT COORDINATOR</b> WIDRIG, DL	<b>PRICE CODE</b> 8N	<b>DATA TURNAROUND</b> 45 Days / 45 Days
<b>SAMPLING LOCATION</b> C7016 I-007	<b>PROJECT DESIGNATION</b> K-West Characterization - Groundwater Contacted Sediments		<b>SAF NO.</b> F08-148	<b>AIR QUALITY</b> <input type="checkbox"/>	
<b>ICE CHEST NO.</b>	<b>FIELD LOGBOOK NO.</b> HNF-04585-10	<b>ACTUAL SAMPLE DEPTH</b> 92.1'	<b>COA</b> 123630ES10	<b>METHOD OF SHIPMENT</b> GOVERNMENT VEHICLE	
<b>SHIPPED TO</b> Waste Sampling & Characterization	<b>OFFSITE PROPERTY NO.</b>		<b>BILL OF LADING/AIR BILL NO.</b>		

<b>MATRIX*</b> 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	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> 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)	<b>PRESERVATION</b>	Cool~4C																		
		<b>TYPE OF CONTAINER</b>	aGs*																		
		<b>NO. OF CONTAINER(S)</b>	1																		
		<b>VOLUME</b>	40mL																		
<b>SPECIAL HANDLING AND/OR STORAGE</b>	<b>SAMPLE ANALYSIS</b>	VOA - 5035/8260 (TCL) (Trichloroethene)	7312110																		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME																	
B1WMY6	WJSG/2037Y SOIL	9/20/08	1045																	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
Paul Law	9/20/08 1315	MO 413 Ref 2	9/20/08 1315		
Moyle Finley	9-21-08 0923	C. Fulton / [Signature]	9-21-08 0923		
C. Fulton / [Signature]	9-21-08 09:00	[Signature]	9/21/08 09:00		

<b>LABORATORY SECTION</b>	<b>RECEIVED BY</b>	<b>TITLE</b>	<b>DATE/TIME</b>
<b>FINAL SAMPLE DISPOSITION</b>	<b>DISPOSAL METHOD</b>	<b>DISPOSED BY</b>	<b>DATE/TIME</b>

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ATTACHMENT 5

**SAMPLE RECORD SHEET**

Consisting of 2 pages  
Including cover page

## SAMPLE RECORD SHEET

Sample Number	Sample Suffix <sup>1</sup>	Empty Weight <sup>2</sup> (g)	Weight with Sample <sup>3</sup> (g)	Weight of Sample <sup>4</sup> (g)	Methanol Added (g)	Methanol Added (mL)	Weight of Methanol and Sample
BIWMY5	K	31.6	38.1	6.5	---	---	---
BIWMY5	L	31.6	37.9	6.3	---	---	---
BIWMY5	M	31.6	37.5	5.9	---	---	---
BIWMY5	N	31.8	36.4	4.6	---	---	---
BIWMY5	P	31.5	37.1	5.6	---	---	---
BIWMY6		30.0	30.2	.2	<del>3.9</del>	5 mL	34.1
BIWMY5	W	31.0	35.8	4.8	<del>3.9</del>	8 mL	39.7
BIWMY5	X	30.7	37.6	6.9	<del>5.4</del>	7 mL	44.5
BIWMY5	Y	30.3	35.7	5.4	<del>4.2</del>	6.4 mL	41.1

<sup>1</sup>Sample suffix of L, K, M, N and P relate to low-level concentration samples and will not have any preservation beyond freezing between -7C and -20C.

Sample suffix of W, X, and Y relate to methanol preservation for high-level samples.

<sup>2</sup>Empty weight is to include all labels, stickers, bags, and anything else that will be associated with the bottle when it is weighed with the sample.

<sup>3</sup>Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.

<sup>4</sup>Sample weight is the vial with sample minus the vial empty