

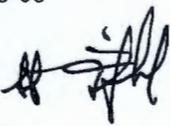
RECEIVED OCTOBER 23, 2008

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**FLUOR****Memorandum**

M4W41-SLF-08-1170

To: M. A. Neely B6-06 Date: October 23, 2008

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

cc: w/Attachments

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

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20081896 – SAF NUMBER F08-098

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 information for sample delivery group WSCF20081896:

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

SLF/grf

Attachments 4

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M4W41-SLF-08-1170

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

## WSCF SAF NUMBER CROSS REFERENCE

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Group#: WSCF20081896  
Data Deliverable Date: 16-oct-2008  
Data Deliverable: Cover Sheet

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SAF#	Sample ID	WSCF#	Matrix
F08-098	B1W1C5	W08GR03580	WATER

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**M4W41-SLF-08-1170**

**ATTACHMENT 2**

**NARRATIVE**

**Consisting of 5 pages  
Including cover page**

### **Introduction**

One (1) S&GRP sample was received at the WSCF Laboratory on September 3, 2008. This sample was analyzed 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.

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

### **Inorganic Comments**

**Ammonia** – 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 GRP Letter of Instruction. See page 18 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WPT2 (SDG# 20081872, SAF# F08-154).
- Sample results were D flagged if dilution(s) were required.
- Sample results that were less than the reportable limit, however greater than the method detection limit, were B flagged.
- Duplicate Relative Percent Difference (RPD) exceeded established laboratory limits. No flags issued.

All other QC controls are within the established limits.

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

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WRF6 (SDG# 20081732, SAF# F08-094).

- QC Sample B1WRF6: The Matrix Spike and Matrix Spike Duplicate analytes entered in our Labcore LIMS system for the ICP-metals did not match the analyte list presented on the COC for sample B1W1C5. Therefore, the analytes of interest for the ICP-metals test for SAF# F08-098 did not appear in our Labcore LIMS system. The analytical results were taken from the raw data and are presented in the table below:

<b>6010 - Sample# B1WRF6</b>			
<b>Analyte</b>	<b>MS</b>	<b>MSD</b>	<b>RPD %</b>
Mn	102%	104%	1.9%
Ni	103%	104%	1.0%
Sb	104%	106%	1.9%
Cd	104%	105%	1.0%
Cr	99.4%	102%	2.6%
V	97.3%	99%	1.7%
Zn	106%	106%	0.0%
Pb	110%	113%	2.7%
Tl	112%	111%	0.90%
As	97.9%	97.1%	0.82%

- All QC controls are within the established limits.

**ICP-MS 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 per the GRP Letter of Instruction. See page 20 for QC details. Analytical Results(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WJK1 (SDG# 20081993), and B1WKW1 (SDG# 20081993).
- Batch QC (B1WJK1) - Sample results exceeded the spiking levels by a factor of four. Spike recoveries are not valid. Sample was X flagged.

All QC controls are within the established limits.

**Total Alkalinity** – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See page 21 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1X1B0 (SDG# 20081905), and B1W1C5 (SDG# 20083580, SAF# F08-098).

All QC controls are within the established limits.

### Organic Comments

VOA – 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 per the GRP Letter of Instruction. See pages 24 through 26 for QC details. Analytical Note(s):

- Sample results that were less than the lowest calibration standard, however greater than the method detection limit, were J flagged.
- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1VJ53 (SDG# 20081857, SAF# F08-127).

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 29 through 35 for QC details. Analytical Note(s):

Rad Chem analyses requested to be performed on this sample included: Gross Alpha & Beta Analysis, Neptunium by AEA, Sr-89/90, Tc-99 by LSC, Tritium Analysis by LSC, and Uranium Isotopics by AEA.

- Tritium by LSC: Matrix Spike and Duplicate was analyzed on sample# B1WPT2, (SDG#20081872, SAF# F08-154).
- TC-99 by LSC: Matrix Spike and Duplicate was analyzed on sample# B1WMR1, (SDG#20081885, SAF# F08-146).
- Strontium 89/90: Duplicate was analyzed on sample# B1WMR1, (SDG#20081885, SAF# F08-146).
- Uranium Isotopic by AEA: Duplicate was analyzed on sample# B1WMP9, (SDG#20081880, SAF# F08-146).
- Uranium Isotopic by AEA: The U-232 tracer recovery for sample B1W1C5 did not meet the laboratory requirement. All of the other QC requirements associated with this batch were acceptable.
- Neptunium-237 by AEA: Matrix Spike, Matrix Spike Duplicate and a Duplicate was analyzed on sample# B1W1C5, (SDG#20081896, SAF# F08-098).
- Neptunium-237 by AEA: The Matrix Spike results for samples B1W1C5, B1TRD4, B1TRD5, and B1TRN3 were below the laboratory established requirement of 75% at 71%, 68.6%, 75.2%, and 72.4% respectively.

- Neptunium-237 by AEA: The LCS result was below the laboratory established requirement of 80% at 72.5%.

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



Andrew Kopriva  
WSCF Client Services

M4W41-SLF-08-1170

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 28 pages  
Including cover page

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

**for**

**Groundwater Remediation Program**

**Richland, WA 99354**

**Attention: Steve Trent**

Analytical:

*S. Fitzgerald 10/23/08*

Client Services:

*A. Kopceva 10/22/08*

*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#: WSCF20081896

Report Date: 22-oct-2008

Report WGPP/ver. 5.2

Groundwater Remediation Program

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Page 1

Department: Inorganic

## W13q Worklist/Batch/QC Report for Group# WSCF20081896

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37935	1	38361	42779	LCS		Total Alkalinity as mg/L CaCO3
37935	14	38361	42779	LCS		Total Alkalinity as mg/L CaCO3
37935	24	38361	42779	LCS		Total Alkalinity as mg/L CaCO3
37935	36	38361	42779	LCS		Total Alkalinity as mg/L CaCO3
37935	44	38361	42779	LCS		Total Alkalinity as mg/L CaCO3
37935	3	38361	42779	DUP	W08GR03580	Total Alkalinity as mg/L CaCO3
37935	2	38361	42779	SAMPLE	W08GR03580	Total Alkalinity as mg/L CaCO3
37935	26	38361	42779	DUP	W08P004309	Total Alkalinity as mg/L CaCO3
37988	3	38410	42823	BLANK		Ammonia (N) by IC
37988	12	38410	42823	BLANK		Ammonia (N) by IC
37988	1	38410	42823	LCS		Ammonia (N) by IC
37988	5	38410	42823	DUP	W08GR03538	Ammonia (N) by IC
37988	6	38410	42823	MS	W08GR03538	Ammonia (N) by IC
37988	7	38410	42823	MSD	W08GR03538	Ammonia (N) by IC
37988	7	38410	42823	SPK-RPD	W08GR03538	Ammonia (N) by IC
37988	10	38410	42823	SAMPLE	W08GR03580	Ammonia (N) by IC
37997	1	38416	42940	BLANK		ICP Metals Analysis, Grd H20 P
37997	2	38416	42940	LCS		ICP Metals Analysis, Grd H20 P
37997	4	38416	42940	MS	W08GR03334	ICP Metals Analysis, Grd H20 P
37997	5	38416	42940	MSD	W08GR03334	ICP Metals Analysis, Grd H20 P
37997	5	38416	42940	SPK-RPD	W08GR03334	ICP Metals Analysis, Grd H20 P
37997	11	38416	42940	SAMPLE	W08GR03580	ICP Metals Analysis, Grd H20 P
38188	1	38613	43038	BLANK		ICP-200.8 MS All possible meta
38188	2	38613	43038	BLANK		ICP-200.8 MS All possible meta
38188	3	38613	43038	LCS		ICP-200.8 MS All possible meta
38188	4	38613	43038	LCS		ICP-200.8 MS All possible meta
38188	38	38613	43038	SAMPLE	W08GR03580	ICP-200.8 MS All possible meta
38188	6	38613	43038	MS	W08P004399	ICP-200.8 MS All possible meta
38188	7	38613	43038	MSD	W08P004399	ICP-200.8 MS All possible meta
38188	7	38613	43038	SPK-RPD	W08P004399	ICP-200.8 MS All possible meta
38188	9	38613	43038	MS	W08P004401	ICP-200.8 MS All possible meta
38188	10	38613	43038	MSD	W08P004401	ICP-200.8 MS All possible meta
38188	10	38613	43038	SPK-RPD	W08P004401	ICP-200.8 MS All possible meta

W13q Worklist/Batch/QC Report for Group# WSCF20081896

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			43201	BLANK		VOA Ground Water Protection
			43201	LCS		VOA Ground Water Protection
			43201	MS	W08GR03511	VOA Ground Water Protection
			43201	MSD	W08GR03511	VOA Ground Water Protection
			43201	SPK-RPD	W08GR03511	VOA Ground Water Protection
			43201	SAMPLE	W08GR03580	VOA Ground Water Protection
			43201	SURR	W08GR03580	VOA Ground Water Protection

Department: Radiochemistry

## W13q Worklist/Batch/QC Report for Group# WSCF20081896

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
38015	1	38437	42914	BLANK		Strontium 89/90
38015	2	38437	42914	LCS		Strontium 89/90
38015	3	38437	42914	DUP	W08GR03553	Strontium 89/90
38015	6	38437	42914	SAMPLE	W08GR03580	Strontium 89/90
38015	7	38437	42914	SURR	W08GR03580	Strontium 89/90
38079	1	38500	43103	BLANK		TC99 by Liquid Scin.
38079	2	38500	43103	LCS		TC99 by Liquid Scin.
38079	4	38500	43103	DUP	W08GR03553	TC99 by Liquid Scin.
38079	3	38500	43103	MS	W08GR03553	TC99 by Liquid Scin.
38079	6	38500	43103	SAMPLE	W08GR03580	TC99 by Liquid Scin.
38238	1	38659	43121	BLANK		Gross Alpha on Alpha Plateau
38238	2	38659	43121	LCS		Gross Alpha on Alpha Plateau
38238	3	38659	43121	DUP	W08GR03580	Gross Alpha on Alpha Plateau
38238	4	38659	43121	SAMPLE	W08GR03580	Gross Alpha on Alpha Plateau
38246	1	38667	43143	BLANK		Gross Alpha/Gross Beta (AB32)
38246	2	38667	43143	LCS		Gross Alpha/Gross Beta (AB32)
38246	3	38667	43143	DUP	W08GR03580	Gross Alpha/Gross Beta (AB32)
38246	4	38667	43143	SAMPLE	W08GR03580	Gross Alpha/Gross Beta (AB32)
37954	1	38378	43177	BLANK		Tritium by Liq Sct column prep
37954	2	38378	43177	LCS		Tritium by Liq Sct column prep
37954	4	38378	43177	DUP	W08GR03538	Tritium by Liq Sct column prep
37954	3	38378	43177	MS	W08GR03538	Tritium by Liq Sct column prep
37954	12	38378	43177	SAMPLE	W08GR03580	Tritium by Liq Sct column prep
38320	1	38741	43209	BLANK		Uranium Isotopics by AEA
38320	2	38741	43209	LCS		Uranium Isotopics by AEA
38320	3	38741	43209	DUP	W08GR03549	Uranium Isotopics by AEA
38320	12	38741	43209	SAMPLE	W08GR03580	Uranium Isotopics by AEA
38320	13	38741	43209	SURR	W08GR03580	Uranium Isotopics by AEA
38390	1	38812	43297	BLANK		Neptunium by AEA
38390	2	38812	43297	LCS		Neptunium by AEA
38390	3	38812	43297	DUP	W08GR03580	Neptunium by AEA
38390	12	38812	43297	MS	W08GR03580	Neptunium by AEA
38390	6	38812	43297	MSD	W08GR03580	Neptunium by AEA
38390	11	38812	43297	SAMPLE	W08GR03580	Neptunium by AEA
38390	12	38812	43297	SPK-RPD	W08GR03580	Neptunium by AEA
38390	5	38812	43297	MS	W08GR03858	Neptunium by AEA
38390	8	38812	43297	MS	W08GR03895	Neptunium by AEA
38390	10	38812	43297	MS	W08GR03896	Neptunium 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-503-401</b>	<b>LA-503-401: ANALYSIS OF CATIONS BY ION CHROMATOGRAPHY</b> EPA-600/4-86-024 300.7 Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemical HEIS 300.7_CATIONS_IC Determination of Ammonium by Ion Chromatography
<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-531-411</b>	<b>LA-531-411: ALKALINITY (TITRIMETRIC)</b> HEIS 2320B Alkalinity Standard Methods 2320B Alkalinity

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: 22-oct-2008

Report#: WSCF20081896

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# 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-523-455</b>	<b>LA-523-455: VOLATILE SAMPLE ANALYSIS BY SW-846</b>
<b>EPA SW-846 8000B</b>	<b>DETERMINATIVE CHROMATOGRAPHIC SEPARATIONS</b>
<b>EPA SW-846 8260B</b>	<b>VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)</b>
<b>HEIS 8260_VOA_GCMS</b>	<b>Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)</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: 22-oct-2008

Report#: WSCF20081896

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# 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>	GROSS ALPHA GPC
<b>HEIS BETA_GPC</b>	GROSS BETA GPC
<b>HEIS SRTOT_SEP_PRECIP_GPC</b>	Protactinium 89/90
<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>	A/B Liquid Scintillation
<b>HEIS BETA_LSC</b>	A/B Liquid Scintillation
<b>HEIS TC99_3MDSK_LSC</b>	TC99 by Liquid Scintillation
<b>HEIS TRITIUM_EIE_LSC</b>	Tritium Liquid Scintillation
<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>	Plutonium by Alpha Energy Analysis
<b>HEIS RAISO_AEA</b>	Radium-226

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: 22-oct-2008

Report#: WSCF20081896

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# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F08-098  
**Sample #:** W08GR03580  
**Client ID:** B1W1C5

TRENT  
WSCF

**Matrix:** WATER

**Group #:** WSCF20081896  
**Department:** Inorganic  
**Sampled:** 09/02/08  
**Received:** 09/03/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
<b>ICP Metals Analysis, Grd H2O P Prep</b>											
<b>ICP Metals Analysis, Grd H2O P</b>											
Manganese	7439-96-5	LA-505-411		102	ug/L			1.00	4.0		09/16/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Antimony	7440-38-0	LA-505-411	U	< 56.0	ug/L			1.00	56		09/16/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		09/16/08
Vanadium	7440-62-2	LA-505-411	U	< 12.0	ug/L			1.00	12		09/16/08
Zinc	7440-66-8	LA-505-411	U	< 9.00	ug/L			1.00	9.0		09/16/08
Lead	7439-92-1	LA-505-411	U	< 45.0	ug/L			1.00	45		09/16/08
Thallium	7440-28-0	LA-505-411	B	69.6	ug/L			1.00	36		09/16/08
Arsenic	7440-38-2	LA-505-411	U	< 78.0	ug/L			1.00	78		09/16/08
<b>ICP-200.8 MS All possible meta Prep</b>											
<b>ICP-200.8 MS All possible meta</b>											
Uranium	7440-61-1	LA-505-412	X	11.7	ug/L			1.00	0.0500		09/25/08
<b>Nitrogen in ammonium</b>											
Nitrogen in ammonium	NH4-N	LA-503-401	D	0.213	mg/L			5.00	0.047		09/12/08
<b>Total Alkalinity as mg/L CaCO3</b>											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		120	mg/L			1.00	1.0		09/10/08

**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)

J - Analyte < lowest calibration but >= MDL.(org)

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

D - Analyte was identified at a secondary dilution factor(inorg)

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

X - Other flags/notes described in the comments/narrative(inorg)

\* - 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 LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Ammonia (N) by IC

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03538</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Ammonia (N) by IC	7664-41-7	1.47e-2		RPD			38.057	20.000		09/12/08
MS	Ammonia (N) by IC	7664-41-7	0.4454	89.438	% Recov	80.000	120.000				09/12/08
MSD	Ammonia (N) by IC	7664-41-7	0.48	96.386	% Recov	80.000	120.000				09/12/08
SPK-RPD	Ammonia (N) by IC	7664-41-7	96.386		RPD			7.478	20.000		09/12/08
<b>BATCH QC</b>											
BLANK	Ammonia (N) by IC	7664-41-7	<9.32e-3	n/a	mg/L	0.000	0.002			U	09/12/08
BLANK	Ammonia (N) by IC	7664-41-7	<9.32e-3	n/a	mg/L	0.000	0.002			U	09/12/08
LCS	Ammonia (N) by IC	7664-41-7	95.603B	95.604	% Recov	80.000	120.000				09/12/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: ICP Metals Analysis, Grd H2O P

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: W08GR03334</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Arsenic	7440-38-2	979	97.900	% Recov	75.000	125.000				09/16/08
MSD	Arsenic	7440-38-2	971	97.100	% Recov	75.000	125.000				09/16/08
SPK-RPD	Arsenic	7440-38-2	97.100		RPD			0.821	20.000		09/16/08
<b>BATCH QC</b>											
BLANK	Arsenic	7440-38-2	<78	n/a	ug/L					U	09/16/08
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	09/16/08
BLANK	Chromium	7440-47-3	<13	n/a	ug/L					U	09/16/08
BLANK	Manganese	7439-96-5	<4	n/a	ug/L					U	09/16/08
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	09/16/08
BLANK	Lead	7439-92-1	<45	n/a	ug/L					U	09/16/08
BLANK	Antimony	7440-36-0	<56	n/a	ug/L					U	09/16/08
BLANK	Thallium	7440-28-0	<36	n/a	ug/L					U	09/16/08
BLANK	Vanadium	7440-62-2	<12	n/a	ug/L					U	09/16/08
BLANK	Zinc	7440-66-6	<9	n/a	ug/L					U	09/16/08
LCS	Arsenic	7440-38-2	991	99.100	% Recov	80.000	120.000				09/16/08
LCS	Cadmium	7440-43-9	1024	102.400	% Recov	80.000	120.000				09/16/08
LCS	Chromium	7440-47-3	1018	101.800	% Recov	80.000	120.000				09/16/08
LCS	Manganese	7439-96-5	1030	103.000	% Recov	80.000	120.000				09/16/08
LCS	Nickel	7440-02-0	1025	102.500	% Recov	80.000	120.000				09/16/08
LCS	Lead	7439-92-1	1100	110.000	% Recov	80.000	120.000				09/16/08
LCS	Antimony	7440-36-0	1037	103.700	% Recov	80.000	120.000				09/16/08
LCS	Thallium	7440-28-0	1102	110.200	% Recov	80.000	120.000				09/16/08
LCS	Vanadium	7440-62-2	982	98.200	% Recov	80.000	120.000				09/16/08
LCS	Zinc	7440-66-6	1044	104.400	% Recov	80.000	120.000				09/16/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: ICP-200.8 MS All possible meta

Sample Date: 09/15/08  
 Receive Date: 09/15/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08P004399</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Uranium	7440-61-1	21.7	54.250	% Recov	70.000	130.000				09/25/08
MSD	Uranium	7440-61-1	2.4	6.000	% Recov	70.000	130.000				09/25/08
SPK-RPD	Uranium	7440-61-1	6.000		RPD			160.166	20.000		09/25/08
<b>Lab ID: W08P004401</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Uranium	7440-61-1	40.8	102.000	% Recov	70.000	130.000				09/25/08
MSD	Uranium	7440-61-1	39.8	99.500	% Recov	70.000	130.000				09/25/08
SPK-RPD	Uranium	7440-61-1	99.500		RPD			2.481	20.000		09/25/08
<b>BATCH QC</b>											
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	09/25/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	09/25/08
LCS	Uranium	7440-61-1	38.49	96.225	% Recov	85.000	115.000				09/25/08
LCS	Uranium	7440-61-1	39.72	99.300	% Recov	85.000	115.000				09/25/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Total Alkalinity as mg/L CaCO3

Sample Date: 09/02/08  
 Receive Date: 09/03/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Total Alkalinity as mg/L CaCO3	ALKALINITY	106.3		RPD			8.298	20.000		09/10/08
<b>Lab ID: W08P004309</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Total Alkalinity as mg/L CaCO3	ALKALINITY	87.07		RPD			0.710	20.000		09/10/08
<b>BATCH QC</b>											
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.48	108.993	%Recover	80.000	120.000				09/10/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.89	110.369	%Recover	80.000	120.000				09/10/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.44	108.859	%Recover	80.000	120.000				09/10/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.55	109.228	%Recover	80.000	120.000				09/10/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	32.14	107.852	%Recover	80.000	120.000				09/10/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-098

Group #: WSCF20081896  
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS:Sample result for sample P-4399 more than 10 times the spike amount. Recovery data not valid.  U-235 Dup is flagged but the sample activity is low level. RPD does not apply to low level samples. Imh U-232 tracer recovery for sample W08GR03580 is slightly above the limit. Since all the other tracers in this batch came out fine, the batch has been approved. Imh  Np-237 LCS recovery and the matrix spike is slightly below the limit. Imh

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

VALTEST - Test Validation  
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

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Report Date: 22-oct-2008

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# WSCF ANALYTICAL RESULTS REPORT

**Attention:** Steve Trent  
**SAF Number:** F08-098  
**Sample #:** W08GR03580  
**Client ID:** B1W1C5

**TRENT**  
**WSCF**

**Matrix: WATER**

**Group #:** WSCF20081896  
**Department:** Organic  
**Sampled:** 09/02/08  
**Received:** 09/03/08

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	< 1.00	ug/L			1.00	1.0		09/09/08
Trichloroethene	79-01-8	LA-523-455	J	3.50	ug/L			1.00	1.0		09/09/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Toluene	108-88-3	LA-523-455	J	2.00	ug/L			1.00	1.0		09/09/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
1,2-Dichloroethane	107-08-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Dibromochloromethane	124-48-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Carbon tetrachloride	58-23-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
1,1,1,2-Tetrachloroethane	79-34-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Methylenechloride	75-09-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Bromodichloromethane	75-27-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08
Hexane	110-54-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		09/09/08

**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)

J - Analyte < lowest calibration but > = MDL.(org)

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

D - Analyte was identified at a secondary dilution factor(inorg)

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

X - Other flags/notes described in the comments/narrative(inorg)

- 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 LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: VOA Ground Water Protection

Sample Date: 08/27/08  
 Receive Date: 08/27/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR03511											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	1,1-Dichloroethene	75-35-4	24.570	98.300	% Recov	63.000	117.000				09/09/08
MS	Benzene	71-43-2	23.540	94.200	% Recov	75.000	129.000				09/09/08
MS	4-Bromofluorobenzene(Surr)	460-00-4	46.820	93.600	% Recov	75.000	125.000				09/09/08
MS	Chlorobenzene	108-90-7	24.540	98.200	% Recov	79.000	119.000				09/09/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.170	106.000	% Recov	75.000	125.000				09/09/08
MS	Toluene-d8(Surr)	2037-26-5	47.030	94.100	% Recov	75.000	125.000				09/09/08
MS	Toluene	108-88-3	24.280	97.100	% Recov	76.000	120.000				09/09/08
MS	Trichloroethene	79-01-6	20.520	82.100	% Recov	73.000	123.000				09/09/08
MSD	1,1-Dichloroethene	75-35-4	25.690	103.000	% Recov	63.000	117.000				09/09/08
MSD	Benzene	71-43-2	24.090	96.400	% Recov	75.000	129.000				09/09/08
MSD	4-Bromofluorobenzene(Surr)	460-00-4	46.460	92.900	% Recov	75.000	125.000				09/09/08
MSD	Chlorobenzene	108-90-7	25.280	101.000	% Recov	79.000	119.000				09/09/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.600	107.000	% Recov	75.000	125.000				09/09/08
MSD	Toluene-d8(Surr)	2037-26-5	47.050	94.100	% Recov	75.000	125.000				09/09/08
MSD	Toluene	108-88-3	25.010	100.000	% Recov	76.000	120.000				09/09/08
MSD	Trichloroethene	79-01-6	20.190	80.800	% Recov	73.000	123.000				09/09/08
SPK-RPD	1,1-Dichloroethene	75-35-4	103.000		RPD			4.670	20.000		09/09/08
SPK-RPD	Benzene	71-43-2	96.400		RPD			2.308	20.000		09/09/08
SPK-RPD	4-Bromofluorobenzene(Surr)	460-00-4	92.900		RPD			0.751	20.000		09/09/08
SPK-RPD	Chlorobenzene	108-90-7	101.000		RPD			2.811	20.000		09/09/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	107.000		RPD			0.939	20.000		09/09/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	94.100		RPD			0.000	20.000		09/09/08
SPK-RPD	Toluene	108-88-3	100.000		RPD			2.943	20.000		09/09/08
SPK-RPD	Trichloroethene	79-01-6	80.800		RPD			1.596	20.000		09/09/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: VOA Ground Water Protection

Sample Date: 09/02/08  
 Receive Date: 09/03/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	4-Bromofluorobenzene(Surr)	460-00-4	47.650	95.300	% Recov	75.000	125.000				09/09/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.500	107.000	% Recov	75.000	125.000				09/09/08
SURR	Toluene-d8(Surr)	2037-26-5	48.250	96.500	% Recov	75.000	125.000				09/09/08
<b>BATCH QC</b>											
BLANK	1,1,2,2-Tetrachloroethane	79-34-5	< 1.0	n/a	ug/L	0.000	5.000			U	09/09/08
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	09/09/08
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Bromodichloromethane	75-27-4	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	09/09/08
BLANK	4-Bromofluorobenzene(Surr)	460-00-4	46.200	92.400	% Recov	75.000	125.000				09/09/08
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Dibromochloromethane	124-48-1	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	09/09/08
BLANK	1,2-Dichloroethane-d4(Surr)	17060-07-0	53.340	107.000	% Recov	75.000	125.000				09/09/08
BLANK	Hexane	110-54-3	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Methylenechloride	75-09-2	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Toluene-d8(Surr)	2037-26-5	47.330	94.700	% Recov	75.000	125.000				09/09/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	09/09/08
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L					U	09/09/08
LCS	1,1-Dichloroethene	75-35-4	23.670	94.700	% Recov	75.000	125.000				09/09/08
LCS	Benzene	71-43-2	24.130	96.500	% Recov	75.000	125.000				09/09/08
LCS	4-Bromofluorobenzene(Surr)	460-00-4	46.980	94.000	% Recov	75.000	125.000				09/09/08
LCS	Chlorobenzene	108-90-7	25.040	100.000	% Recov	75.000	125.000				09/09/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	52.420	105.000	% Recov	75.000	125.000				09/09/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081896  
Matrix: WATER  
Test: VOA Ground Water Protection

Sample Date:  
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Toluene-d8(Surr)	2037-26-5	47.320	94.600	% Recov	75.000	125.000				09/09/08
LCS	Toluene	108-88-3	24.560	98.200	% Recov	75.000	125.000				09/09/08
LCS	Trichloroethene	79-01-6	21.130	84.500	% Recov	75.000	125.000				09/09/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-098

Group #: WSCF20081896  
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Sample result for sample P-4399 more than 10 times the spike amount. Recovery data not valid.  U-235 Dup is flagged but the sample activity is low level. RPD does not apply to low level samples. Imh U-232 tracer recovery for sample W08GR03580 is slightly above the limit. Since all the other tracers in this batch came out fine, the batch has been approved. Imh  Np-237 LCS recovery and the matrix spike is slightly below the limit. Imh

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 LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Gross Alpha on Alpha Plateau

Sample Date: 09/02/08  
 Receive Date: 09/03/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Gross alpha on alpha plateau	12587-46-1	2.8		RPD			19.608	20.000		09/29/08
<b>BATCH QC</b>											
BLANK	Gross alpha on alpha plateau	12587-46-1-ap	U-2.2E-01	n/a	pCi/L	-100.000	100.000				09/29/08
LCS	Gross alpha on alpha plateau	12587-46-1-ap	36.0	92.927	% Recov	80.000	120.000				09/29/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Gross Alpha/Gross Beta (AB32)

Sample Date: 09/02/08  
 Receive Date: 09/03/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Gross beta	12587-47-2	1.8E+01		RPD			5.714	20.000		09/22/08
<b>BATCH QC</b>											
BLANK	Gross beta	12587-47-2	U-2.7E-02	n/a	pCi/L	-10.000	10.000				09/22/08
LCS	Gross beta	12587-47-2	122	108.734	% Recov	80.000	120.000				09/22/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Neptunium by AEA

Sample Date: 09/02/08  
 Receive Date: 09/03/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Neptunium-237	13994-20-2	U0.18		RPD			n/a	20.000		10/13/08
MS	Neptunium-237	13994-20-2	71	71.000	% Recov	75.000	125.000				10/13/08
MSD	Neptunium-237	13994-20-2	78.0	78.000	% Recov	75.000	125.000				10/13/08
SPK-RPD	Neptunium-237	13994-20-2	77.690		% RPD			8.999	20.000		10/13/08
<b>Lab ID: W08GR03858</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Neptunium-237	13994-20-2	68.6	68.600	% Recov	75.000	125.000				10/13/08
<b>Lab ID: W08GR03895</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Neptunium-237	13994-20-2	75.2	75.200	% Recov	75.000	125.000				10/13/08
<b>Lab ID: W08GR03896</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
MS	Neptunium-237	13994-20-2	72.4	72.400	% Recov	75.000	125.000				10/13/08
<b>BATCH QC</b>											
BLANK	Neptunium-237	13994-20-2	U-2.1e-6	n/a	pCi/L	-10.000	1000.000				10/13/08
LCS	Neptunium-237	13994-20-2	72.5	72.500	% Recov	80.000	120.000				10/13/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Strontium 89/90

Sample Date: 08/29/08  
 Receive Date: 08/29/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03553</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Sr-85 Tracer by Beta Counting	SR85	95.6	95.600	% Recov	30.000	105.000				09/15/08
DUP	Strontium-89/90	SR-RAD	U-3.7		RPD			n/a	20.000		09/15/08
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	Sr-85 Tracer by Beta Counting	SR85	84.5	84.500	% Recov	30.000	105.000				09/15/08
<b>BATCH QC</b>											
BLANK	Sr-85 Tracer by Beta Counting	SR85	91	91.000	% Recov	30.000	105.000				09/15/08
BLANK	Strontium-89/90	10098-97-2	U-2.4	n/a	pCi/L	-10.000	100.000				09/15/08
LCS	Sr-85 Tracer by Beta Counting	SR85	93.0	93.000	% Recov	30.000	105.000				09/15/08
LCS	Strontium-89/90	10098-97-2	142.0	102.283	% Recov	80.000	120.000				09/15/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: TC99 by Liquid Scin.

Sample Date: 08/29/08  
 Receive Date: 08/29/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03553</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Tc-99 by Liquid Scin.	14133-76-7	2.2E+01		RPD			0.000	20.000		09/26/08
MS	Tc-99 by Liquid Scin.	14133-76-7	855.6	102.978	% Recov	75.000	125.000				09/26/08
<b>BATCH QC</b>											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U-1.8	n/a	pCi/L	-10.000	10.000				09/26/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	162	101.887	% Recov	80.000	120.000				09/26/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Tritium by Liq Sct column prep

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03538</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	Tritium	10028-17-8	U-9.1E+01		RPD			n/a	20.000		10/01/08
MS	Tritium	10028-17-8	20813	92.590	% Recov	75.000	125.000				10/01/08
<b>BATCH QC</b>											
BLANK	Tritium	10028-17-8	U4.6E+01	n/a	pCi/L	-10.000	1000.000				10/01/08
LCS	Tritium	10028-17-8	3010.0	88.893	% Recov	80.000	120.000				10/01/08

# WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081896  
 Matrix: WATER  
 Test: Uranium Isotopics by AEA

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
<b>Lab ID: W08GR03549</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
DUP	U-232 tracer by AEA	U232	10.3	102.670	% Recov	30.000	105.000				10/07/08
DUP	Uranium-233/234	U-233/234	2.2		RPD			4.444	20.000		10/07/08
DUP	Uranium-235	15117-96-1	8.4e-2		RPD			35.294	20.000		10/07/08
DUP	Uranium-238	U-238	1.7		RPD			16.216	20.000		10/07/08
<b>Lab ID: W08GR03580</b>											
<b>BATCH QC ASSOCIATED WITH SAMPLE</b>											
SURR	U-232 tracer by AEA	U232	10.3	105.300	% Recov	30.000	105.000				10/07/08
<b>BATCH QC</b>											
BLANK	U-232 tracer by AEA	U232	10.3	95.770	% Recov	30.000	105.000				10/07/08
BLANK	Uranium-233/234	13966-29-5	0.11	0.110	pCi/L	-10.000	1000.000				10/07/08
BLANK	Uranium-235	15117-96-1	U1.9e-2	n/a	pCi/L	-10.000	1000.000				10/07/08
BLANK	Uranium-238	24678-82-8	8.9e-2	0.089	pCi/L	-10.000	1000.000				10/07/08
LCS	U-232 tracer by AEA	U232	11.43	94.890	% Recov	30.000	105.000				10/07/08
LCS	Uranium-233/234	13966-29-5	N/A	n/a	% Recov	75.000	125.000				10/07/08
LCS	Uranium-238	24678-82-8	21	110.789	% Recov	80.000	120.000				10/07/08

# WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent  
Project Number F08-098

Group #: WSCF20081896  
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-MS:Sample result for sample P-4399 more than 10 times the spike amount. Recovery data not valid.</p> <p>U-235 Dup is flagged but the sample activity is low level. RPD does not apply to low level samples. Imh</p> <p>U-232 tracer recovery for sample W08GR03580 is slightly above the limit. Since all the other tracers in this batch came out fine, the batch has been approved. Imh</p> <p>Np-237 LCS recovery and the matrix spike is slightly below the limit. Imh</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-08-1170

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*

ACKNOWLEDGMENT OF SAMPLES RECEIVED

*Due to  
11/16/08*

Groundwater Remediation Program

Richland, WA 99354  
Attn: Steve Trent

Customer Code: GPP  
PO#: 122588/ES10  
Group#: 20081896  
Project#: F08-098  
Proj Mgr: Steve Trent E6-35  
Phone: 373-5869

The following samples were received from you on 09/03/08. 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
W08GR03580	B1W1C5	TRENT Water		09/02/08
		@2008 @AB-32 @AEA-32 @AEA-33 @ALPHALIN @SR89_90 @TC99	@H3-33 @IC-30	
		@ALPHA @GPP6010 @VOA-GPP NH4-IC		

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@AB-32	Gross Alpha/Gross Beta (AB32)
@AEA-32	Uranium Isotopics by AEA
@AEA-33	Neptunium by AEA
@ALKALIN	Total Alkalinity (Titrimetric)
@ALPHA	Gross Alpha on Alpha Plateau
@GPP6010	ICP Metals Analysis, Grd H2O P
@H3-33	Tritium by Liq Sct column prep
@IC-30	Anions by Ion Chromatography
@SR89_90	Strontium 89/90
@TC99-30	TC99 by Liquid Scin.
@VOA-GPP	VOA Ground Water Protection
NH4-IC	Ammonia (N) by IC



