0081794

RECEIVED SEPTEMBER 29, 2008

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FLUOR

Memorandum

M4W41-SLF-08-1077

To: H. Hampt E6-35 Date: September 29, 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 WSCF20081732 – SAF NUMBER F08-094

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

(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 WSCF20081732:

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

SLF/grf

Attachments 4

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ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#:	WSCF20081732	
Data Deliverable Date:	29-sep-2008	
Data Deliverable:	Cover Sheet	

SAF#	Sample ID	WSCF#	Matrix
F08-094	B1WRF6	W08GR03334	WATER

M4W41-SLF-08-1077

ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Introduction

One S&GRP sample was received at the WSCF Laboratory on August 13, 2008. This sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) forms in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

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

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

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 12 through 13, for a complete listing of approved analytical methods.

Inorganic Comments

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 per GRP Letter of Instruction. See pages 16 through 17 for QC details.

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WPW9 (SDG# 20081731, SAF# F08-155.
- The Fluoride recovery in the MS/MSD was slightly below the established laboratory limit of 80% at 79.0% and 78.8% respectively. Sample was N flagged for Phosphate.
- The Phosphate recovery in the MSD was slightly below the established laboratory limit of 80% at 75.8%. Sample was N flagged for Phosphate.

All other QC controls are within the established limits.

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

All QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See pages 19 through 21 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WRF6 of this SDG.
- Boron contamination detected in the Blank and affected sample result was C flagged.
- Low Sodium and Calcium recovery occurred in the MS/MSD for this sample, therefore, the Sodium and Calcium analytes in this sample were "N" flagged.
- 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 per the GRP Letter of Instruction. See pages 22 through 26 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WRF6 of this SDG.
- Nickel and Zinc contamination detected in the Blank; affected sample results were C flagged.

All other 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 Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 30 through 35 for QC details. Analytical Note(s):

- Uranium Isotopic – Duplicate Sample was analyzed on sample# B1W1B1 (SDG# 20081478, SAF# F08-133).
- Plutonium Isotopic – Duplicate Sample was analyzed on sample# B1W1B1 (SDG# 20081478, SAF# F08-133).
- Americium – Duplicate Sample was analyzed on sample# B1W1B1 (SDG# 20081478, SAF# F08-133).
- Strontium 89/90 – Duplicate Sample was analyzed on sample# B1TT63 (SDG# 20081042, SAF# F08-077).

- Technetium by LSC – Duplicate Sample was analyzed on sample# B1WPH8 (SDG# 20081729, SAF# F08-146).
- Strontium 89/90 – Duplicate Sample was analyzed on sample# B1WPH4 (SDG# 20081675, SAF# F08-146).
- All QC controls are within the established limits.

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

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Andrew Kopriva
WSCF Client Services

M4W41-SLF-08-1077

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 29 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: S. Fitzgerald 9/29/08

Client Services: A. Kopriva 9/28/08

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#: WSCF20081732
Report Date: 25-sep-2008
Report WGPP/ver. 5.2

w13qlog v4.2 25-sep-2008 06:32:33

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20081732

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37599	2	38044	42392	BLANK		Anions by Ion Chromatography
37599	11	38044	42392	BLANK		Anions by Ion Chromatography
37599	3	38044	42392	LCS		Anions by Ion Chromatography
37599	5	38044	42392	DUP	W08GR03332	Anions by Ion Chromatography
37599	6	38044	42392	MS	W08GR03332	Anions by Ion Chromatography
37599	7	38044	42392	MSD	W08GR03332	Anions by Ion Chromatography
37599	7	38044	42392	SPK-RPD	W08GR03332	Anions by Ion Chromatography
37599	9	38044	42392	SAMPLE	W08GR03334	Anions by Ion Chromatography
37684	1	38119	42479	BLANK		ICP-200.8 MS All possible meta
37684	2	38119	42479	LCS		ICP-200.8 MS All possible meta
37684	4	38119	42479	MS	W08GR03308	ICP-200.8 MS All possible meta
37684	5	38119	42479	MSD	W08GR03308	ICP-200.8 MS All possible meta
37684	5	38119	42479	SPK-RPD	W08GR03308	ICP-200.8 MS All possible meta
37684	7	38119	42479	MS	W08GR03334	ICP-200.8 MS All possible meta
37684	8	38119	42479	MSD	W08GR03334	ICP-200.8 MS All possible meta
37684	6	38119	42479	SAMPLE	W08GR03334	ICP-200.8 MS All possible meta
37684	8	38119	42479	SPK-RPD	W08GR03334	ICP-200.8 MS All possible meta
37684	10	38119	42479	MS	W08GR03344	ICP-200.8 MS All possible meta
37684	11	38119	42479	MSD	W08GR03344	ICP-200.8 MS All possible meta
37684	11	38119	42479	SPK-RPD	W08GR03344	ICP-200.8 MS All possible meta
37709	11	38145	42529	BLANK		Cyanide by Midi/Spectrophotom
37709	12	38145	42529	LCS		Cyanide by Midi/Spectrophotom
37709	19	38145	42529	MS	W08GR03334	Cyanide by Midi/Spectrophotom
37709	20	38145	42529	MSD	W08GR03334	Cyanide by Midi/Spectrophotom
37709	18	38145	42529	SAMPLE	W08GR03334	Cyanide by Midi/Spectrophotom
37709	20	38145	42529	SPK-RPD	W08GR03334	Cyanide by Midi/Spectrophotom
37709	14	38145	42529	MS	W08P003881	Cyanide by Midi/Spectrophotom
37709	15	38145	42529	MSD	W08P003881	Cyanide by Midi/Spectrophotom
37709	15	38145	42529	SPK-RPD	W08P003881	Cyanide by Midi/Spectrophotom
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	3	38416	42940	SAMPLE	W08GR03334	ICP Metals Analysis, Grd H20 P
37997	5	38416	42940	SPK-RPD	W08GR03334	ICP Metals Analysis, Grd H20 P

w13qlog v4.2 25-sep-2008 06:32:33

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20081732

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37728	1	38162	42708	BLANK		Strontium 89/90
37728	2	38162	42708	LCS		Strontium 89/90
37728	3	38162	42708	DUP	W08GR03265	Strontium 89/90
37728	14	38162	42708	SAMPLE	W08GR03334	Strontium 89/90
37728	15	38162	42708	SURR	W08GR03334	Strontium 89/90
37643	1	38074	42709	BLANK		Gamma Energy Analysis-grd H2O
37643	2	38074	42709	LCS		Gamma Energy Analysis-grd H2O
37643	3	38074	42709	DUP	W08GR03334	Gamma Energy Analysis-grd H2O
37643	4	38074	42709	SAMPLE	W08GR03334	Gamma Energy Analysis-grd H2O
37895	1	38323	42772	BLANK		Uranium Isotopics by AEA
37895	2	38323	42772	LCS		Uranium Isotopics by AEA
37895	3	38323	42772	DUP	W08GR02623	Uranium Isotopics by AEA
37895	12	38323	42772	SAMPLE	W08GR03334	Uranium Isotopics by AEA
37895	13	38323	42772	SURR	W08GR03334	Uranium Isotopics by AEA
37896	1	38324	42811	BLANK		Plutonium Isotopics by AEA
37896	2	38324	42811	LCS		Plutonium Isotopics by AEA
37896	3	38324	42811	DUP	W08GR02623	Plutonium Isotopics by AEA
37896	12	38324	42811	SAMPLE	W08GR03334	Plutonium Isotopics by AEA
37896	13	38324	42811	SURR	W08GR03334	Plutonium Isotopics by AEA
37897	1	38325	42813	BLANK		Americium by AEA
37897	2	38325	42813	LCS		Americium by AEA
37897	3	38325	42813	DUP	W08GR02623	Americium by AEA
37897	12	38325	42813	SAMPLE	W08GR03334	Americium by AEA
37897	13	38325	42813	SURR	W08GR03334	Americium by AEA
37945	1	38370	42888	BLANK		TC99 by Liquid Scin.
37945	2	38370	42888	LCS		TC99 by Liquid Scin.
37945	4	38370	42888	DUP	W08GR03329	TC99 by Liquid Scin.
37945	3	38370	42888	MS	W08GR03329	TC99 by Liquid Scin.
37945	6	38370	42888	SAMPLE	W08GR03334	TC99 by Liquid Scin.

WSCF
METHOD REFERENCES REPORT

Department: Inorganic

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

LA-505-411	LA-505-411: ELEMENTAL ANALYSIS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPE	
	HEIS 6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	
	EPA-600/R-94-111 200.8	DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLAS
	HEIS 200.8_METALS_ICPMS	Inductively Coupled Plasma - Mass Spectrometry
	HEIS RADISOTOPES_ICPMS	Radioisotopes by ICP/MS
LA-533-410	LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY	
	EPA-600/R-94-111 300.0	DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY
	HEIS 300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography
LA-695-402	LA-695-402: DETERMINATION OF CYANIDE BY MIDIDISTILLATION AND SPECTROPHOTOMETRIC	
	EPA-600/4-79-020 335.2	Cyanide, Total
	HEIS 335.2_CYANIDE	Cyanide, Total

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

WSCF
METHOD REFERENCES REPORT

Department: Radiochemistry

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

LA-508-415 LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS

HEIS ALPHA_GPC	GROSS ALPHA GPC
HEIS BETA_GPC	GROSS BETA GPC
HEIS SRTOT_SEP_PRECIP_GPC	Strontium 89/90

LA-508-421 LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER

HEIS ALPHA_LSC	A/B Liquid Scintilillation
HEIS BETA_LSC	A/B Liquid Scintilallation
HEIS TC99_3MDSK_LSC	TC99 by Liquid Scintillation
HEIS TRITIUM_EIE_LSC	Tritium Liquid Scintillation

LA-508-471 LA-508-471: ALPHA ENERGY ANALYZER DATA ACQUISITION AND SYSTEM CHECKOUT USING ALP

HEIS PUISO_IE_PRECIP_AEA	Plutonium by Alpha Energy Analysis
HEIS RAISO_AEA	Radium-226

LA-508-481 LA-508-481: GAMMA ENERGY ANALYSIS USING PROCOUNT SOFTWARE

HEIS GAMMA_GS	Gamma Emmision Spectrometry

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F08-094
Sample # W08GR03334
Client ID: B1WRF6 TRENT WSCF
Matrix: WATER

Group #: WSCF20081732
Department: Inorganic
Sampled: 08/13/08
Received: 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Fluoride	16984-48-8	LA-533-410	NU	< 0.0232	mg/L			1.00	0.023		08/13/08
Chloride	16887-00-6	LA-533-410	U	< 0.0469	mg/L			1.00	0.047		08/13/08
Nitrogen in Nitrite	NO2-N	LA-533-410	U	< 0.0128	mg/L			1.00	0.013		08/13/08
Nitrogen in Nitrate	NO3-N	LA-533-410	U	< 0.0121	mg/L			1.00	0.012		08/13/08
Phosphate (P) by IC	PO4-P	LA-533-410	NU	< 0.0606	mg/L			1.00	0.061		08/13/08
Sulfate	14808-79-8	LA-533-410	U	< 0.132	mg/L			1.00	0.13		08/13/08
Cyanide											
Cyanide	57-12-5	LA-695-402	U	< 4.00	ug/L			1.00	4.0		08/20/08
ICP Metals Analysis, Grd H20 P Prep											**09/11/08**
ICP Metals Analysis, Grd H20 P											
Aluminum	7429-90-5	LA-505-411	U	< 52.0	ug/L			1.00	52		09/16/08
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		09/16/08
Magnesium	7439-95-4	LA-505-411	U	< 50.0	ug/L			1.00	50		09/16/08
Potassium	7440-09-7	LA-505-411	U	< 170	ug/L			1.00	1.7e+02		09/16/08
Sodium	7440-23-5	LA-505-411	U	< 51.0	ug/L			1.00	51		09/16/08
Barium	7440-39-3	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Calcium	7440-70-2	LA-505-411		73.0	ug/L			1.00	73		09/16/08
Lithium	7439-93-2	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Molybdenum	7439-98-7	LA-505-411	U	< 5.00	ug/L			1.00	5.0		09/16/08
Strontium	7440-24-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Titanium	7440-32-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Arsenic	7440-38-2	LA-505-411	U	< 78.0	ug/L			1.00	78		09/16/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/16/08
Boron	7440-42-8	LA-505-411	C	49.9	ug/L			1.00	20		09/16/08

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

C - The Analyte was found in the Associated Blank.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F08-094
Sample # W08GR03334
Client ID: B1WRF6 TRENT WSCF **Matrix:** WATER

Group #: WSCF20081732
Department: Inorganic
Sampled: 08/13/08
Received: 08/13/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Bismuth	7440-69-9	LA-505-411	U	< 35.0	ug/L			1.00	35		09/23/08
ICP-200.8 MS All possible meta Prep											**08/19/08**
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412		15.3	ug/L			1.00	0.100		08/19/08
Nickel	7440-02-0	LA-505-412	C	1.71	ug/L			1.00	0.200		08/19/08
Silver	7440-22-4	LA-505-412	U	< 0.100	ug/L			1.00	0.100		08/19/08
Antimony	7440-36-0	LA-505-412	U	< 0.300	ug/L			1.00	0.300		08/19/08
Cadmium	7440-43-9	LA-505-412	U	< 0.100	ug/L			1.00	0.100		08/19/08
Chromium	7440-47-3	LA-505-412		0.810	ug/L			1.00	0.500		08/19/08
Cobalt	7440-48-4	LA-505-412		0.0600	ug/L			1.00	0.0500		08/19/08
Copper	7440-50-8	LA-505-412		4.23	ug/L			1.00	0.100		08/19/08
Vanadium	7440-62-2	LA-505-412	U	< 0.200	ug/L			1.00	0.200		08/19/08
Zinc	7440-66-6	LA-505-412	C	1.43	ug/L			1.00	0.800		08/19/08
Lead	7439-92-1	LA-505-412		0.280	ug/L			1.00	0.100		08/19/08
Mercury	7439-97-6	LA-505-412	U	< 0.0500	ug/L			1.00	0.0500		08/19/08
Uranium	7440-61-1	LA-505-412	U	< 0.0500	ug/L			1.00	0.0500		08/19/08
Selenium	7782-49-2	LA-505-412	U	< 0.300	ug/L			1.00	0.300		08/19/08
Thallium	7440-28-0	LA-505-412		0.100	ug/L			1.00	0.100		08/19/08

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

C - The Analyte was found in the Associated Blank.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: Anions by Ion Chromatography

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

Lab ID: W08GR03332
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
DUP	Chloride	16887-00-6	3.3225		RPD			3.893	20.000		08/13/08
DUP	Fluoride	16984-48-8	<1.1832		RPD			n/a	20.000	U	08/13/08
DUP	Nitrogen in Nitrite	NO2-N	<0.6528		RPD			n/a	20.000	U	08/13/08
DUP	Nitrogen in Nitrate	NO3-N	<0.6171		RPD			n/a	20.000	U	08/13/08
DUP	Phosphate (P) by IC	PO4-P	<3.0906		RPD			n/a	20.000	U	08/13/08
DUP	Sulfate	14808-79-8	8.3155		RPD			0.266	20.000		08/13/08
MS	Chloride	16887-00-6	0.909208	91.378	% Recov	80.000	120.000				08/13/08
MS	Fluoride	16984-48-8	0.389696	79.046	% Recov	80.000	120.000			*	08/13/08
MS	Nitrogen in Nitrite	NO2-N	0.465876	94.690	% Recov	80.000	120.000				08/13/08
MS	Nitrogen in Nitrate	NO3-N	0.41659	93.406	% Recov	80.000	120.000				08/13/08
MS	Phosphate (P) by IC	PO4-P	0.768367	80.289	% Recov	80.000	120.000				08/13/08
MS	Sulfate	14808-79-8	1.934678	98.708	% Recov	80.000	120.000				08/13/08
MSD	Chloride	16887-00-6	0.924857	92.950	% Recov	80.000	120.000				08/13/08
MSD	Fluoride	16984-48-8	0.388447	78.792	% Recov	80.000	120.000			*	08/13/08
MSD	Nitrogen in Nitrite	NO2-N	0.452192	91.909	% Recov	80.000	120.000				08/13/08
MSD	Nitrogen in Nitrate	NO3-N	0.422249	94.675	% Recov	80.000	120.000				08/13/08
MSD	Phosphate (P) by IC	PO4-P	0.725078	75.766	% Recov	80.000	120.000			*	08/13/08
MSD	Sulfate	14808-79-8	1.934394	98.694	% Recov	80.000	120.000				08/13/08
SPK-RPD	Chloride	16887-00-6	92.950		RPD			1.706	20.000		08/13/08
SPK-RPD	Fluoride	16984-48-8	78.792		RPD			0.322	20.000		08/13/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	91.909		RPD			2.981	20.000		08/13/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	94.675		RPD			1.349	20.000		08/13/08
SPK-RPD	Phosphate (P) by IC	PO4-P	75.766		RPD			5.797	20.000		08/13/08
SPK-RPD	Sulfate	14808-79-8	98.694		RPD			0.014	20.000		08/13/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BATCH QC											
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	08/13/08
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	08/13/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	08/13/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	08/13/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	08/13/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	08/13/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	08/13/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	08/13/08
BLANK	Phosphate (P) by IC	PO4-P	<6.06e-2	n/a	mg/L	0.000	0.200			U	08/13/08
BLANK	Phosphate (P) by IC	PO4-P	<6.06e-2	n/a	mg/L	0.000	0.200			U	08/13/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	08/13/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	08/13/08
LCS	Chloride	16887-00-6	192.9055	95.973	% Recov	80.000	120.000				08/13/08
LCS	Fluoride	16984-48-8	101.0699	101.476	% Recov	80.000	120.000				08/13/08
LCS	Nitrogen in Nitrite	NO2-N	96.3114	96.893	% Recov	80.000	120.000				08/13/08
LCS	Nitrogen in Nitrate	NO3-N	89.5856	99.429	% Recov	80.000	120.000				08/13/08
LCS	Phosphate (P) by IC	PO4-P	182.2048	94.211	% Recov	80.000	120.000				08/13/08
LCS	Sulfate	14808-79-8	381.2057	96.264	% Recov	80.000	120.000				08/13/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: Cyanide by Midi/Spectrophotom

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
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Cyanide by Midi/Spectrophotom	57-12-5	36.1	90.250	% Recov	75.000	125.000				08/20/08
MSD	Cyanide by Midi/Spectrophotom	57-12-5	41.3	103.250	% Recov	75.000	125.000				08/20/08
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	103.250		RPD			13.437	20.000		08/20/08
Lab ID: W08P003881											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Cyanide by Midi/Spectrophotom	57-12-5	103	257.500	% Recov	75.000	125.000		*		08/20/08
MSD	Cyanide by Midi/Spectrophotom	57-12-5	83.3	208.250	% Recov	75.000	125.000		*		08/20/08
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	208.250		RPD			21.149	20.000 *		08/20/08
BATCH QC											
BLANK	Cyanide by Midi/Spectrophotom	57-12-5	< 4	n/a	ug/L	-4.000	4.000			U	08/20/08
LCS	Cyanide by Midi/Spectrophotom	57-12-5	44.4	88.800	% Recov	85.000	115.000				08/20/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

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

Lab ID: W08GR03334
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	Aluminum	7429-90-5	996.5	99.650	% Recov	75.000	125.000				09/16/08
MS	Arsenic	7440-38-2	979	97.900	% Recov	75.000	125.000				09/16/08
MS	Boron	7440-42-8	969.1	96.910	% Recov	70.000	130.000				09/16/08
MS	Barium	7440-39-3	505	101.000	% Recov	75.000	125.000				09/16/08
MS	Beryllium	7440-41-7	532.6	106.520	% Recov	75.000	125.000				09/16/08
MS	Calcium	7440-70-2	1101	110.100	% Recov	75.000	125.000				09/16/08
MS	Iron	7439-89-6	983.9	98.390	% Recov	75.000	125.000				09/16/08
MS	Potassium	7440-09-7	11190	111.900	% Recov	75.000	125.000				09/16/08
MS	Lithium	7439-93-2	501.4	100.280	% Recov	70.000	130.000				09/16/08
MS	Magnesium	7439-95-4	1005	100.500	% Recov	75.000	125.000				09/16/08
MS	Molybdenum	7439-98-7	1044	104.400	% Recov	70.000	130.000				09/16/08
MS	Sodium	7440-23-5	1066	106.600	% Recov	75.000	125.000				09/16/08
MS	Strontium	7440-24-6	508.3	101.660	% Recov	75.000	125.000				09/16/08
MS	Titanium	7440-32-6	1012	101.200	% Recov	75.000	125.000				09/16/08
MSD	Aluminum	7429-90-5	988.3	98.830	% Recov	75.000	125.000				09/16/08
MSD	Arsenic	7440-38-2	971	97.100	% Recov	75.000	125.000				09/16/08
MSD	Boron	7440-42-8	983.1	98.310	% Recov	75.000	125.000				09/16/08
MSD	Barium	7440-39-3	510	102.000	% Recov	75.000	125.000				09/16/08
MSD	Beryllium	7440-41-7	539.7	107.940	% Recov	75.000	125.000				09/16/08
MSD	Calcium	7440-70-2	1090	109.000	% Recov	75.000	125.000				09/16/08
MSD	Iron	7439-89-6	1017	101.700	% Recov	75.000	125.000				09/16/08
MSD	Potassium	7440-09-7	10930	109.300	% Recov	75.000	125.000				09/16/08
MSD	Lithium	7439-93-2	483.9	96.780	% Recov	75.000	125.000				09/16/08
MSD	Magnesium	7439-95-4	994.1	99.410	% Recov	75.000	125.000				09/16/08
MSD	Molybdenum	7439-98-7	1050	105.000	% Recov	75.000	125.000				09/16/08
MSD	Sodium	7440-23-5	1046	104.600	% Recov	75.000	125.000				09/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 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
MSD	Strontium	7440-24-6	511.4	102.280	% Recov	75.000	125.000				09/16/08
MSD	Titanium	7440-32-6	1022	102.200	% Recov	75.000	125.000				09/16/08
SPK-RPD	Aluminum	7429-90-5	98.830		RPD			0.826	20.000		09/16/08
SPK-RPD	Arsenic	7440-38-2	97.100		RPD			0.821	20.000		09/16/08
SPK-RPD	Boron	7440-42-8	98.310		RPD			1.434	20.000		09/16/08
SPK-RPD	Barium	7440-39-3	102.000		RPD			0.985	20.000		09/16/08
SPK-RPD	Beryllium	7440-41-7	107.940		RPD			1.324	20.000		09/16/08
SPK-RPD	Calcium	7440-70-2	109.000		RPD			1.004	20.000		09/16/08
SPK-RPD	Iron	7439-89-6	101.700		RPD			3.309	20.000		09/16/08
SPK-RPD	Potassium	7440-09-7	109.300		RPD			2.351	20.000		09/16/08
SPK-RPD	Lithium	7439-93-2	96.780		RPD			3.552	20.000		09/16/08
SPK-RPD	Magnesium	7439-95-4	99.410		RPD			1.090	20.000		09/16/08
SPK-RPD	Molybdenum	7439-98-7	105.000		RPD			0.573	20.000		09/16/08
SPK-RPD	Sodium	7440-23-5	104.600		RPD			1.894	20.000		09/16/08
SPK-RPD	Strontium	7440-24-6	102.280		RPD			0.608	20.000		09/16/08
SPK-RPD	Titanium	7440-32-6	102.200		RPD			0.983	20.000		09/16/08

BATCH QC

BLANK	Aluminum	7429-90-5	<52	n/a	ug/L					U	09/16/08
BLANK	Arsenic	7440-38-2	<78	n/a	ug/L					U	09/16/08
BLANK	Boron	7440-42-8	49.7	49.700	ug/L						09/16/08
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	09/16/08
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	09/16/08
BLANK	Calcium	7440-70-2	<73	n/a	ug/L					U	09/16/08
BLANK	Iron	7439-89-6	<25	n/a	ug/L					U	09/16/08
BLANK	Potassium	7440-09-7	<170	n/a	ug/L					U	09/16/08
BLANK	Lithium	7439-93-2	<4	n/a	ug/L					U	09/16/08
BLANK	Magnesium	7439-95-4	<50	n/a	ug/L					U	09/16/08
BLANK	Molybdenum	7439-98-7	<5	n/a	ug/L					U	09/16/08
BLANK	Sodium	7440-23-5	<51	n/a	ug/L					U	09/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	09/16/08
BLANK	Titanium	7440-32-6	<4	n/a	ug/L					U	09/16/08
LCS	Aluminum	7429-90-5	987.2	98.720	% Recov	80.000	120.000				09/16/08
LCS	Arsenic	7440-38-2	991	99.100	% Recov	80.000	120.000				09/16/08
LCS	Boron	7440-42-8	1028	102.800	% Recov	80.000	120.000				09/16/08
LCS	Barium	7440-39-3	507	101.400	% Recov	80.000	120.000				09/16/08
LCS	Beryllium	7440-41-7	534.8	106.960	% Recov	80.000	120.000				09/16/08
LCS	Calcium	7440-70-2	1156	115.600	% Recov	80.000	120.000				09/16/08
LCS	Iron	7439-89-6	988.5	98.850	% Recov	80.000	120.000				09/16/08
LCS	Potassium	7440-09-7	10780	107.800	% Recov	80.000	120.000				09/16/08
LCS	Lithium	7439-93-2	487	97.400	% Recov	80.000	120.000				09/16/08
LCS	Magnesium	7439-95-4	998.8	99.880	% Recov	80.000	120.000				09/16/08
LCS	Molybdenum	7439-98-7	1045	104.500	% Recov	80.000	120.000				09/16/08
LCS	Sodium	7440-23-5	1027	102.700	% Recov	80.000	120.000				09/16/08
LCS	Strontium	7440-24-6	508.5	101.700	% Recov	80.000	120.000				09/16/08
LCS	Titanium	7440-32-6	1021	102.100	% Recov	80.000	120.000				09/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP-200.8 MS All possible meta

Sample Date: 08/10/08
Receive Date:08/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR03308											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Cadmium	7440-43-9	35.06	87.650	% Recov	70.000	130.000				08/19/08
MS	Chromium	7440-47-3	31.5	78.750	% Recov	70.000	130.000				08/19/08
MS	Copper	7440-50-8	31.84	79.600	% Recov	70.000	130.000				08/19/08
MS	Manganese	7439-96-5	14	35.000	% Recov	70.000	130.000			•	08/19/08
MS	Nickel	7440-02-0	32.74	81.850	% Recov	70.000	130.000				08/19/08
MS	Lead	7439-92-1	39.86	99.650	% Recov	70.000	130.000				08/19/08
MS	Zinc	7440-66-6	117.2	293.000	% Recov	70.000	130.000			•	08/19/08
MSD	Cadmium	7440-43-9	34.16	85.400	% Recov	70.000	130.000				08/19/08
MSD	Chromium	7440-47-3	30	75.000	% Recov	70.000	130.000				08/19/08
MSD	Copper	7440-50-8	30.88	77.200	% Recov	70.000	130.000				08/19/08
MSD	Manganese	7439-96-5	-22	-55.000	% Recov	70.000	130.000			•	08/19/08
MSD	Nickel	7440-02-0	32.03	80.075	% Recov	70.000	130.000				08/19/08
MSD	Lead	7439-92-1	38.9	97.250	% Recov	70.000	130.000				08/19/08
MSD	Zinc	7440-66-6	117.9	294.750	% Recov	70.000	130.000			•	08/19/08
SPK-RPD	Cadmium	7440-43-9	85.400		RPD			2.600	20.000		08/19/08
SPK-RPD	Chromium	7440-47-3	75.000		RPD			4.878	20.000		08/19/08
SPK-RPD	Copper	7440-50-8	77.200		RPD			3.061	20.000		08/19/08
SPK-RPD	Manganese	7439-96-5	-55.000		RPD			-900.000	20.000	•	08/19/08
SPK-RPD	Nickel	7440-02-0	80.075		RPD			2.192	20.000		08/19/08
SPK-RPD	Lead	7439-92-1	97.250		RPD			2.438	20.000		08/19/08
SPK-RPD	Zinc	7440-66-6	294.750		RPD			0.595	20.000		08/19/08
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Silver	7440-22-4	38.91	97.275	% Recov	70.000	130.000				08/19/08
MS	Cadmium	7440-43-9	36.22	90.550	% Recov	70.000	130.000				08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP-200.8 MS All possible meta

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
MS	Cobalt	7440-48-4	37.63	94.075	% Recov	70.000	130.000				08/19/08
MS	Chromium	7440-47-3	36.3	90.750	% Recov	70.000	130.000				08/19/08
MS	Copper	7440-50-8	37.08	92.700	% Recov	70.000	130.000				08/19/08
MS	Mercury	7439-97-6	2.3	115.000	% Recov	70.000	130.000				08/19/08
MS	Manganese	7439-96-5	35.02	87.550	% Recov	70.000	130.000				08/19/08
MS	Nickel	7440-02-0	37.42	93.550	% Recov	70.000	130.000				08/19/08
MS	Lead	7439-92-1	38.68	96.700	% Recov	70.000	130.000				08/19/08
MS	Antimony	7440-36-0	37.77	94.425	% Recov	70.000	130.000				08/19/08
MS	Selenium	7782-49-2	33.62	84.050	% Recov	70.000	130.000				08/19/08
MS	Thallium	7440-28-0	37.32	93.300	% Recov	70.000	130.000				08/19/08
MS	Uranium	7440-61-1	38.16	95.400	% Recov	70.000	130.000				08/19/08
MS	Vanadium	7440-62-2	36.51	91.275	% Recov	70.000	130.000				08/19/08
MS	Zinc	7440-66-6	38.55	96.375	% Recov	70.000	130.000				08/19/08
MSD	Silver	7440-22-4	39.45	98.625	% Recov	70.000	130.000				08/19/08
MSD	Cadmium	7440-43-9	37.37	93.425	% Recov	70.000	130.000				08/19/08
MSD	Cobalt	7440-48-4	39.05	97.625	% Recov	70.000	130.000				08/19/08
MSD	Chromium	7440-47-3	38.43	96.075	% Recov	70.000	130.000				08/19/08
MSD	Copper	7440-50-8	38.49	96.225	% Recov	70.000	130.000				08/19/08
MSD	Mercury	7439-97-6	2.3	115.000	% Recov	70.000	130.000				08/19/08
MSD	Manganese	7439-96-5	36.84	92.100	% Recov	70.000	130.000				08/19/08
MSD	Nickel	7440-02-0	38.98	97.450	% Recov	70.000	130.000				08/19/08
MSD	Lead	7439-92-1	38.55	96.375	% Recov	70.000	130.000				08/19/08
MSD	Antimony	7440-36-0	38.62	96.550	% Recov	70.000	130.000				08/19/08
MSD	Selenium	7782-49-2	35.13	87.825	% Recov	70.000	130.000				08/19/08
MSD	Thallium	7440-28-0	37.71	94.275	% Recov	70.000	130.000				08/19/08
MSD	Uranium	7440-61-1	38.36	95.900	% Recov	70.000	130.000				08/19/08
MSD	Vanadium	7440-62-2	37.96	94.900	% Recov	70.000	130.000				08/19/08
MSD	Zinc	7440-66-6	40.22	100.550	% Recov	70.000	130.000				08/19/08
SPK-RPD	Silver	7440-22-4	98.625		RPD			1.378	20.000		08/19/08
SPK-RPD	Cadmium	7440-43-9	93.425		RPD			3.125	20.000		08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP-200.8 MS All possible meta

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
SPK-RPD	Cobalt	7440-48-4	97.625		RPD			3.704	20.000		08/19/08
SPK-RPD	Chromium	7440-47-3	96.075		RPD			5.701	20.000		08/19/08
SPK-RPD	Copper	7440-50-8	96.225		RPD			3.732	20.000		08/19/08
SPK-RPD	Mercury	7439-97-6	115.000		RPD			0.000	20.000		08/19/08
SPK-RPD	Manganese	7439-96-5	92.100		RPD			5.065	20.000		08/19/08
SPK-RPD	Nickel	7440-02-0	97.450		RPD			4.084	20.000		08/19/08
SPK-RPD	Lead	7439-92-1	96.375		RPD			0.337	20.000		08/19/08
SPK-RPD	Antimony	7440-36-0	96.550		RPD			2.225	20.000		08/19/08
SPK-RPD	Selenium	7782-49-2	87.825		RPD			4.393	20.000		08/19/08
SPK-RPD	Thallium	7440-28-0	94.275		RPD			1.040	20.000		08/19/08
SPK-RPD	Uranium	7440-61-1	95.900		RPD			0.523	20.000		08/19/08
SPK-RPD	Vanadium	7440-62-2	94.900		RPD			3.894	20.000		08/19/08
SPK-RPD	Zinc	7440-66-6	100.550		RPD			4.240	20.000		08/19/08

Lab ID: W08GR03344
BATCH QC ASSOCIATED WITH SAMPLE

MS	Cadmium	7440-43-9	35.1	87.750	% Recov	70.000	130.000				08/19/08
MS	Cobalt	7440-48-4	35.12	87.800	% Recov	70.000	130.000				08/19/08
MS	Chromium	7440-47-3	38.9	97.250	% Recov	70.000	130.000				08/19/08
MS	Manganese	7439-96-5	44	110.000	% Recov	70.000	130.000				08/19/08
MS	Nickel	7440-02-0	33.9	84.750	% Recov	70.000	130.000				08/19/08
MS	Lead	7439-92-1	40.35	100.875	% Recov	70.000	130.000				08/19/08
MS	Zinc	7440-66-6	64.4	161.000	% Recov	70.000	130.000			*	08/19/08
MSD	Cadmium	7440-43-9	34.65	86.625	% Recov	70.000	130.000				08/19/08
MSD	Cobalt	7440-48-4	33.42	83.550	% Recov	70.000	130.000				08/19/08
MSD	Chromium	7440-47-3	30.5	76.250	% Recov	70.000	130.000				08/19/08
MSD	Manganese	7439-96-5	-6	-15.000	% Recov	70.000	130.000			*	08/19/08
MSD	Nickel	7440-02-0	32.16	80.400	% Recov	70.000	130.000				08/19/08
MSD	Lead	7439-92-1	39.51	98.775	% Recov	70.000	130.000				08/19/08
MSD	Zinc	7440-66-6	44.8	112.000	% Recov	70.000	130.000				08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP-200.8 MS All possible meta

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Cadmium	7440-43-9	86.625		RPD			1.290	20.000		08/19/08
SPK-RPD	Cobalt	7440-48-4	83.550		RPD			4.961	20.000		08/19/08
SPK-RPD	Chromium	7440-47-3	76.250		RPD			24.207	20.000 •		08/19/08
SPK-RPD	Manganese	7439-96-5	-15.000		RPD			263.158	20.000 •		08/19/08
SPK-RPD	Nickel	7440-02-0	80.400		RPD			5.268	20.000		08/19/08
SPK-RPD	Lead	7439-92-1	98.775		RPD			2.104	20.000		08/19/08
SPK-RPD	Zinc	7440-66-6	112.000		RPD			35.897	20.000 •		08/19/08
BATCH QC											
BLANK	Silver	7440-22-4	<0.1	n/a	ug/L					U	08/19/08
BLANK	Cadmium	7440-43-9	<0.1	n/a	ug/L					U	08/19/08
BLANK	Cobalt	7440-48-4	<5e-2	n/a	ug/L					U	08/19/08
BLANK	Chromium	7440-47-3	<0.5	n/a	ug/L					U	08/19/08
BLANK	Copper	7440-50-8	<0.1	n/a	ug/L					U	08/19/08
BLANK	Mercury	7439-97-6	<5e-2	n/a	ug/L					U	08/19/08
BLANK	Manganese	7439-96-5	<0.1	n/a	ug/L					U	08/19/08
BLANK	Nickel	7440-02-0	0.34	0.340	ug/L						08/19/08
BLANK	Lead	7439-92-1	<0.1	n/a	ug/L					U	08/19/08
BLANK	Antimony	7440-36-0	<0.3	n/a	ug/L					U	08/19/08
BLANK	Selenium	7782-49-2	<0.3	n/a	ug/L					U	08/19/08
BLANK	Thallium	7440-28-0	<0.1	n/a	ug/L					U	08/19/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	08/19/08
BLANK	Vanadium	7440-62-2	<0.2	n/a	ug/L					U	08/19/08
BLANK	Zinc	7440-66-6	1.14	1.140	ug/L						08/19/08
LCS	Silver	7440-22-4	39.34	98.350	% Recov	85.000	115.000				08/19/08
LCS	Cadmium	7440-43-9	36.62	91.550	% Recov	85.000	115.000				08/19/08
LCS	Cobalt	7440-48-4	38.49	96.225	% Recov	85.000	115.000				08/19/08
LCS	Chromium	7440-47-3	38.05	95.125	% Recov	85.000	115.000				08/19/08
LCS	Copper	7440-50-8	37.77	94.425	% Recov	85.000	115.000				08/19/08
LCS	Mercury	7439-97-6	2.26	113.000	% Recov	85.000	115.000				08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081732
Matrix: WATER
Test: ICP-200.8 MS All possible meta

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Manganese	7439-96-5	37.98	94.950	% Recov	85.000	115.000				08/19/08
LCS	Nickel	7440-02-0	38.46	96.150	% Recov	85.000	115.000				08/19/08
LCS	Lead	7439-92-1	38.25	95.625	% Recov	85.000	115.000				08/19/08
LCS	Antimony	7440-36-0	37.98	94.950	% Recov	85.000	115.000				08/19/08
LCS	Selenium	7782-49-2	34.99	87.475	% Recov	85.000	115.000				08/19/08
LCS	Thallium	7440-28-0	37.37	93.425	% Recov	85.000	115.000				08/19/08
LCS	Uranium	7440-61-1	37.71	94.275	% Recov	85.000	115.000				08/19/08
LCS	Vanadium	7440-62-2	37.99	94.975	% Recov	85.000	115.000				08/19/08
LCS	Zinc	7440-66-6	39.73	99.325	% Recov	85.000	115.000				08/19/08

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F08-094

Group #: WSCF20081732
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Nickel and zinc PB above the MDL. "C" flags ICP-AES: High boron preparation blank result; "C" flag if applicable. Bismuth preparation blank is <35 ppb; LCS recovery is 101%; MS and MSD recoveries are 98.9% and 103%, respectively.

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: F08-094
Sample # W08GR03334
Client ID: B1WRF6 TRENT **Matrix:** WATER

Group #: WSCF20081732
Department: Radiochemistry
Sampled: 08/13/08
Received: 08/13/08

Test Performed	CAS #	WSCF Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Americium by AEA											
Americium-241	14596-10-2	LA-508-471	U	0.110	pCi/L	+-0.0825	pCi/L	1.00	0.11		09/11/08
Am-243 tracer by AEA	AM243	LA-508-471		10.0	pCi/L			1.00	0.097		09/11/08
Gamma Energy Analysis-grd H2O											
Cesium-137	10045-97-3	LA-508-481	U	0.498	pCi/L	+-4.72	pCi/L	1.00	8.3		08/18/08
Europium-154	15585-10-1	LA-508-481	U	-1.38	pCi/L	+-13.2	pCi/L	1.00	23		08/18/08
Plutonium Isotopics by AEA											
Plutonium-238	13981-16-3	LA-508-471	U	-0.0160	pCi/L	+-0.0912	pCi/L	1.00	0.17		09/10/08
Pu-239/240 by AEA	PU-239/240	LA-508-471	U	-0.0110	pCi/L	+-0.0312	pCi/L	1.00	0.071		09/10/08
Pu-242 tracer by AEA	PU242	LA-508-471		16.0	pCi/L			1.00	0.015		09/10/08
Strontium 89/90											
Strontium-89/90	SR-RAD	LA-508-415	U	-3.80	pCi/L	+-3.80	pCi/L	1.00	0.87		08/21/08
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		92.4	Percent			1.00	0.0		08/21/08
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421	U	3.90	pCi/L	+-3.55	pCi/L	1.00	5.7		09/13/08
Uranium Isotopics by AEA											
Uranium-233/234	U-233/234	LA-508-471		0.0470	pCi/L	+-0.0352	pCi/L	1.00	0.040		09/09/08
Uranium-235	15117-96-1	LA-508-471	U	4.70e-03	pCi/L	+-0.0163	pCi/L	1.00	0.034		09/09/08
Uranium-238	U-238	LA-508-471		0.0210	pCi/L	+-0.0195	pCi/L	1.00	0.012		09/09/08
U-232 tracer by AEA	U232	LA-508-471		10.0	pCi/L			1.00	0.068		09/09/08

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

C - The Analyte was found in the Associated Blank.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

WSCF
TENTATIVELY IDENTIFIED PEAK REPORT

Attention: Steve Trent
Project Number F08-094 :F08-094

Group #: WSCF20081732
Department: Radiochemistry

Sample #	Client ID		Test Name	Peak Name	CAS#	RT	RQ	Result	Units
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	BI-214				3.1e+02	pCi/L
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	BI-214 Count Error				17	%
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	K-40				2.3e+02	pCi/L
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	K-40 Count Error				36	%
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	RA-226				2.5e+02	pCi/L
W08GR03334	B1WRF6	TRENT	Gamma Energy Analysis-grd H2O	RA-226 Count Error				18	%

RQ=Result Qualifier

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WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081732
Matrix: WATER
Test: Americium by AEA

Sample Date: 07/16/08
Receive Date:07/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR02623											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Americium-241	14596-10-2	U-4.1e-2		RPD			n/a	20.000		09/10/08
DUP	Am-243 tracer by AEA	AM243	10.01	70.770	% Recov	30.000	105.000				09/10/08
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Am-243 tracer by AEA	AM243	10.01	74.940	% Recov	30.000	105.000				09/11/08
BATCH QC											
BLANK	Americium-241	14596-10-2	U1.4e-2	n/a	pCi/L	-10.000	1000.000				09/10/08
BLANK	Am-243 tracer by AEA	AM243	10.01	59.080	% Recov	30.000	105.000				09/10/08
LCS	Americium-241	14596-10-2	13.3	112.236	% Recov	80.000	120.000				09/10/08
LCS	Am-243 tracer by AEA	AM243	10.01	59.871	% Recov	30.000	105.000				09/10/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081732
Matrix: WATER
Test: Gamma Energy Analysis-grd H2O

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
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Cesium-137	10045-97-3	U-1.734		RPD			n/a	20.000		08/19/08
DUP	Europium-154	15585-10-1	U-6.538		RPD			n/a	20.000		08/19/08
BATCH QC											
BLANK	Cesium-137	10045-97-3	U0.2619	n/a	pCi/L	-10.000	1000.000				08/19/08
BLANK	Europium-154	15585-10-1	U-1.326	n/a	pCi/L	-10.000	1000.000				08/19/08
LCS	Cesium-137	10045-97-3	6439	106.606	% Recov	80.000	120.000				08/20/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081732
Matrix: WATER
Test: Plutonium Isotopics by AEA

Sample Date: 07/16/08
Receive Date:07/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR02623											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Plutonium-238	13981-16-3	U-1.7e-2		RPD			n/a	20.000		09/09/08
DUP	Pu-239/240 by AEA	PU-239/240	U1.3e-2		RPD			n/a	20.000		09/09/08
DUP	Pu-242 tracer by AEA	PU242	15.59	95.780	% Recov	30.000	105.000				09/09/08
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Pu-242 tracer by AEA	PU242	15.59	75.610	% Recov	30.000	105.000				09/10/08
BATCH QC											
BLANK	Plutonium-238	13981-16-3	U1.4e-2	n/a	pCi/L	-10.000	1000.000				09/09/08
BLANK	Pu-239/240 by AEA	PU-239/240	U1.4e-2	n/a	pCi/L	-10.000	1000.000				09/09/08
BLANK	Pu-242 tracer by AEA	PU242	15.59	87.210	% Recov	30.000	105.000				09/09/08
LCS	Pu-239/240 by AEA	PU-239/240	12.39	96.458	% Recov	80.000	120.000				09/09/08
LCS	Pu-242 tracer by AEA	PU242	17.3	97.780	% Recov	30.000	105.000				09/09/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Radiochemistry**

SDG Number: WSCF20081732
Matrix: WATER
Test: Strontium 89/90

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR03265											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Sr-85 Tracer by Beta Counting	SR85	82.7	82.700	% Recov	30.000	105.000				08/21/08
DUP	Strontium-89/90	SR-RAD	U-3.2		RPD			n/a	20.000		08/21/08
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Sr-85 Tracer by Beta Counting	SR85	92.4	92.400	% Recov	30.000	105.000				08/21/08
BATCH QC											
BLANK	Sr-85 Tracer by Beta Counting	SR85	93.7	93.700	% Recov	30.000	105.000				08/21/08
BLANK	Strontium-89/90	10098-97-2	U-2.2	n/a	pCi/L	-10.000	100.000				08/21/08
LCS	Sr-85 Tracer by Beta Counting	SR85	88.1	88.100	% Recov	30.000	105.000				08/21/08
LCS	Strontium-89/90	10098-97-2	150.0	108.046	% Recov	80.000	120.000				08/21/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Radiochemistry**

SDG Number: WSCF20081732
Matrix: WATER
Test: TC99 by Liquid Scin.

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
Lab ID: W08GR03329											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tc-99 by Liquid Scin.	14133-76-7	4.6E+01		RPD			0.000	20.000		09/13/08
MS	Tc-99 by Liquid Scin.	14133-76-7	677.6	106.417	% Recov	75.000	125.000				09/13/08
BATCH QC											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U3.3	n/a	pCi/L	-10.000	10.000				09/13/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	170.2	106.910	% Recov	80.000	120.000				09/13/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081732
Matrix: WATER
Test: Uranium Isotopics by AEA

Sample Date: 07/16/08
Receive Date:07/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08GR02623											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	U-232 tracer by AEA	U232	10.22	100.190	% Recov	30.000	105.000				09/09/08
DUP	Uranium-233/234	U-233/234	0.66		RPD			20.408	20.000 •		09/09/08
DUP	Uranium-235	15117-96-1	U8.9e-3		RPD			n/a	20.000		09/09/08
DUP	Uranium-238	U-238	0.29		RPD			47.368	20.000 •		09/09/08
Lab ID: W08GR03334											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	U-232 tracer by AEA	U232	10.22	102.140	% Recov	30.000	105.000				09/09/08
BATCH QC											
BLANK	U-232 tracer by AEA	U232	10.22	100.650	% Recov	30.000	105.000				09/09/08
BLANK	Uranium-233/234	13966-29-5	4.7e-2	0.047	pCi/L	-10.000	1000.000				09/09/08
BLANK	Uranium-235	15117-96-1	1.8e-2	0.018	pCi/L	-10.000	1000.000				09/09/08
BLANK	Uranium-238	24678-82-8	1.3e-2	0.013	pCi/L	-10.000	1000.000				09/09/08
LCS	U-232 tracer by AEA	U232	11.35	77.670	% Recov	30.000	105.000				09/09/08
LCS	Uranium-233/234	13966-29-5	N/A	n/a	% Recov	75.000	125.000				09/09/08
LCS	Uranium-238	24678-82-8	19.97	105.355	% Recov	80.000	120.000				09/09/08

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F08-094

Group #: WSCF20081732
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Nickel and zinc PB above the MDL. "C" flags ICP-AES: High boron preparation blank result; "C" flag if applicable. Bismuth preparation blank is <35 ppb; LCS recovery is 101%; MS and MSD recoveries are 98.9% and 103%, respectively.

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-08-1077

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 3 pages
Including cover page

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

ACKNOWLEDGMENT OF SAMPLES RECEIVED

09/2.,

Groundwater Remediation Program

Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 123117ES10
Group#: 20081732
Project#: F08-094
Proj Mgr: Steve Trent E6-35
Phone: 373-5869

The following samples were received from you on 08/13/08. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample#	Sample Id	Tests Scheduled	Matrix				Sample Date
W08GR03334	B1WRF6		TRENT	Water			08/13/08
		@2008	@AEA-30	@AEA-31	@AEA-32	@GEA-GPP	
		@GPP6010	@IC-30	@SR89_90	@TC99-30	CN-02	

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@AEA-30	Plutonium Isotopics by AEA
@AEA-31	Americium by AEA
@AEA-32	Uranium Isotopics by AEA
@GEA-GPP	Gamma Energy Analysis-grd H2O
@GPP6010	ICP Metals Analysis, Grd H20 P
@IC-30	Anions by Ion Chromatography
@SR89_90	Strontium 89/90
@TC99-30	TC99 by Liquid Scin.
CN-02	Cyanide by Midi/Spectrophotom

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 7N	DATA TURNAROUND
KAUSL, MCINTYRE	TRENT, SJ	373-5869	WIDRIG, DL		
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**	**AIR QUALITY** ☐	45 Days / 45 Days
C5756 EB-001	200-CW-1 Model Group 5 Sampling - Large Ponds and Waste Sites - QC Sa		F08-094		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
	HNF-N-585-1		123117E520	GOVERNMENT VEHICLE	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Waste Sampling & Characterization					

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

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

SPECIAL HANDLING AND/OR STORAGE: 20081732

PRESERVATION	HNO3 to pH <2	NaOH to pH >= 12/Cool~4C	Cool~4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH<2	HNO3 to pH <2	HCl to pH <2
TYPE OF CONTAINER	G/P	G/P	P	Square Bottle - Poly	G/P	P	G/P	G/P	G/P
NO. OF CONTAINER(S)	1	1	1	1	1	1	1	1	2
VOLUME	500mL	250mL	500mL	500mL	1000mL	1000mL	1000mL	1L	1L
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Cyanide (Total) - 335.2;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Gamma Spectroscopy (Cesium-137, Europium-154)	Americium-241;	Isotopic Plutonium (Plutonium-239/240)	Isotopic Uranium (Uranium-238)	Strontium-89,90 -- Total Sr;	Technetium-99 (Technetium-99)
List 4	031628	027994	031628	2110-0016	020060	028688	031204	~~031204~~	031204

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B1WRF6 W08GK03394	WATER	08-13-08	11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Ed Kaufman / Ed Kaufman	08-13-08 1125	TA FMAZIM / James Fie	8/13/08 1125
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

(1)ICP Metals - 6010B (TAL) {Aluminum, Barium, Calcium, Iron, Magnesium, Potassium, Sodium} ICP Metals - 6010B (Add-On) {Arsenic, Beryllium, Bismuth, Boron, Lithium, Molybdenum, Strontium, Titanium} ICP/MS - 200.8 (TAL) {Antimony, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc} ICP/MS - 200.8 (Add-on) {Lead, Selenium, Thallium, Uranium} 200.8_HG - ICPMS; (2)IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorus in phosphate, Sulfate}

ICED

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

A-6003-618(01/06)