

RECEIVED JANUARY 20, 2009

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 Richland, Washington 99352
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FLUOR[®]

M4W41-SLF-09-042

January 19, 2009

Mr. M. A. Neely, Manager
 Analytical Services
 CH2M HILL Plateau Remediation Contract
 PO Box 1600 MSIN B6-06
 Richland, WA 99352

RECEIVED
 APR 02 2009
EDMC

Dear Mike:

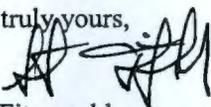
FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20082385 ✓

- Reference: (1) Memorandum of Agreement #MOA-FH-CHPRC-2008, Rev. 0, for the Performance & Payment of Services, dated October 1, 2008
- (2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following attachments for sample delivery group WSCF20082385:

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

Very truly yours,


 S. L. Fitzgerald
 WSCF Analytical Lab

SLF/grf

Attachments 4

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

M4W41-SLF-09-042

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20082385
Data Deliverable Date: 26-jan-2009
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I09-012	B1XY42	W08P005621	WATER
	B1XY43	W08P005622	WATER
S09-011	B1XWD4	W08P005623	WATER
W09-012	B1X0P2	W08P005624	WATER
	B1Y0M8	W08P005616	WATER
	B1Y0M9	W08P005619	WATER
	B1Y0N2	W08P005615	WATER
	B1Y0N3	W08P005618	WATER
	B1Y0N6	W08P005617	WATER
	B1Y0N7	W08P005620	WATER

M4W41-SLF-09-042

ATTACHMENT 2

NARRATIVE

**Consisting of 4 pages
Including cover page**

Introduction

Ten groundwater samples were received at the WSCF Laboratory on December 11, 2008. Samples were 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 transport 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

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 30 through 32 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.
- Duplicates, Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1Y277 (SDG# 20082375) and B1X9D1 (SDG# 20082384).

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. See pages 33 through 39 for QC details. Analytical Note(s):

- Sample results that were less than the reportable limit, however greater than the method detection limit, were B flagged.
- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1Y376 (SDG# 20082387) and B1Y2F3 (SDG# 20082378).

- Calcium, Magnesium and Sodium – sample levels exceeded spiking levels by a factor of 4. Spike recoveries are not valid. Check standard was analyzed to verify linearity for analytes greater than the calibration standard.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 40 through 41 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1XLL0 (SDG# 20082293), B1Y2P4 (SDG# 20082377) and B1XY43 of this SDG.

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. See page 42 for QC details.

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. See pages 48 through 50 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# B1XB21 (SDG# 20082346).
- 1,1-Dichloroethene – Matrix Spike Duplicate recovery exceeded established laboratory limits. No flags issued.
- Acetone contamination detected in the Blank was evaluated and there was no affect on sample results.

All other QC controls are within the established limits.

Radiochemistry Comments

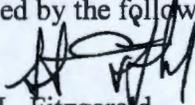
Rad Chem – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 56 through 58 for QC details. Analytical Note(s):

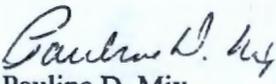
- Strontium-89/90 and 85 (tracer) – Duplicate QC was analyzed on sample# B1X927 (SDG# 20082384).

- Technetium-99 – Duplicate and Matrix Spike were analyzed on sample# B1XWK8 (SDG# 20082378).
- Tritium – Laboratory Control Sample recovery was slightly less than established laboratory limits. No flags issued.

All other QC controls are within the established limits.

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


Scot L. Fitzgerald
WSCF Analytical Laboratory Manager


Pauline D. Mix
WSCF Client Services

M4W41-SLF-09-042

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 52 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

GPAP
Richland, WA 99352

Attention: Steve Trent E6-35

Analytical: *[Signature]* S. Fitzgerald 1-17-09
Client Services: *[Signature]* P.D. Mix 1-17-2009

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

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

Report#: WSCF20082385
Report Date: 13-jan-2009
Report WGPP/ver. 5.2
GPAP

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20082385

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
38838	2	39254	43734	BLANK		Anions by Ion Chromatography
38838	13	39254	43734	BLANK		Anions by Ion Chromatography
38838	3	39254	43734	LCS		Anions by Ion Chromatography
38838	5	39254	43734	DUP	W08P005483	Anions by Ion Chromatography
38838	6	39254	43734	MS	W08P005483	Anions by Ion Chromatography
38838	7	39254	43734	MSD	W08P005483	Anions by Ion Chromatography
38838	7	39254	43734	SPK-RPD	W08P005483	Anions by Ion Chromatography
38838	10	39254	43734	SAMPLE	W08P005618	Anions by Ion Chromatography
38838	11	39254	43734	SAMPLE	W08P005619	Anions by Ion Chromatography
38838	12	39254	43734	SAMPLE	W08P005620	Anions by Ion Chromatography
38858	2	39274	43776	BLANK		Anions by Ion Chromatography
38858	13	39274	43776	BLANK		Anions by Ion Chromatography
38858	3	39274	43776	LCS		Anions by Ion Chromatography
38858	5	39274	43776	DUP	W08P005612	Anions by Ion Chromatography
38858	6	39274	43776	MS	W08P005612	Anions by Ion Chromatography
38858	7	39274	43776	MSD	W08P005612	Anions by Ion Chromatography
38858	7	39274	43776	SPK-RPD	W08P005612	Anions by Ion Chromatography
38858	8	39274	43776	SAMPLE	W08P005622	Anions by Ion Chromatography
38871	1	39286	43805	BLANK		ICP Metals Analysis, Grd H20 P
38871	2	39286	43805	LCS		ICP Metals Analysis, Grd H20 P
38871	6	39286	43805	SAMPLE	W08P005621	ICP Metals Analysis, Grd H20 P
38871	4	39286	43805	MS	W08P005659	ICP Metals Analysis, Grd H20 P
38871	5	39286	43805	MSD	W08P005659	ICP Metals Analysis, Grd H20 P
38871	5	39286	43805	SPK-RPD	W08P005659	ICP Metals Analysis, Grd H20 P
38914	1	39329	43853	LCS		Total Alkalinity as mg/L CaCO3
38914	13	39329	43853	LCS		Total Alkalinity as mg/L CaCO3
38914	24	39329	43853	LCS		Total Alkalinity as mg/L CaCO3
38914	3	39329	43853	DUP	W08P005618	Total Alkalinity as mg/L CaCO3
38914	2	39329	43853	SAMPLE	W08P005618	Total Alkalinity as mg/L CaCO3
38914	4	39329	43853	SAMPLE	W08P005619	Total Alkalinity as mg/L CaCO3
38914	5	39329	43853	SAMPLE	W08P005620	Total Alkalinity as mg/L CaCO3
38914	6	39329	43853	SAMPLE	W08P005624	Total Alkalinity as mg/L CaCO3
38935	1	39350	43885	BLANK		ICP-200.8 MS All possible meta
38935	2	39350	43885	BLANK		ICP-200.8 MS All possible meta
38935	3	39350	43885	BLANK		ICP-200.8 MS All possible meta
38935	4	39350	43885	LCS		ICP-200.8 MS All possible meta
38935	5	39350	43885	LCS		ICP-200.8 MS All possible meta
38935	6	39350	43885	LCS		ICP-200.8 MS All possible meta
38935	8	39350	43885	MS	W08P005207	ICP-200.8 MS All possible meta
38935	9	39350	43885	MSD	W08P005207	ICP-200.8 MS All possible meta
38935	9	39350	43885	SPK-RPD	W08P005207	ICP-200.8 MS All possible meta
38935	11	39350	43885	MS	W08P005540	ICP-200.8 MS All possible meta
38935	12	39350	43885	MSD	W08P005540	ICP-200.8 MS All possible meta
38935	12	39350	43885	SPK-RPD	W08P005540	ICP-200.8 MS All possible meta
38935	68	39350	43885	SAMPLE	W08P005621	ICP-200.8 MS All possible meta
38935	14	39350	43885	MS	W08P005622	ICP-200.8 MS All possible meta
38935	15	39350	43885	MSD	W08P005622	ICP-200.8 MS All possible meta
38935	13	39350	43885	SAMPLE	W08P005622	ICP-200.8 MS All possible meta

38935	15	39350	43885	SPK-RPD	W08P005622	ICP-200.8 MS All possible meta
38867	1	39279	43966	BLANK		ICP Metals Analysis, Grd H20 P
38867	2	39279	43966	LCS		ICP Metals Analysis, Grd H20 P
38867	4	39279	43966	MS	W08P005605	ICP Metals Analysis, Grd H20 P
38867	5	39279	43966	MSD	W08P005605	ICP Metals Analysis, Grd H20 P
38867	5	39279	43966	SPK-RPD	W08P005605	ICP Metals Analysis, Grd H20 P
38867	7	39279	43966	SAMPLE	W08P005615	ICP Metals Analysis, Grd H20 P
38867	8	39279	43966	SAMPLE	W08P005616	ICP Metals Analysis, Grd H20 P
38867	9	39279	43966	SAMPLE	W08P005617	ICP Metals Analysis, Grd H20 P
38867	10	39279	43966	SAMPLE	W08P005618	ICP Metals Analysis, Grd H20 P
38867	11	39279	43966	SAMPLE	W08P005619	ICP Metals Analysis, Grd H20 P
38867	12	39279	43966	SAMPLE	W08P005620	ICP Metals Analysis, Grd H20 P
38867	13	39279	43966	SAMPLE	W08P005622	ICP Metals Analysis, Grd H20 P

W13q Worklist/Batch/QC Report for Group# WSCF20082385

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			43832	BLANK		VOA Ground Water Protection
			43832	LCS		VOA Ground Water Protection
			43832	MS	W08P005359	VOA Ground Water Protection
			43832	MSD	W08P005359	VOA Ground Water Protection
			43832	SPK-RPD	W08P005359	VOA Ground Water Protection
			43832	SAMPLE	W08P005622	VOA Ground Water Protection
			43832	SURR	W08P005622	VOA Ground Water Protection
			43832	SAMPLE	W08P005623	VOA Ground Water Protection
			43832	SURR	W08P005623	VOA Ground Water Protection

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20082385

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
38959	1	39375	43904	BLANK		Tritium by Liq Sct column prep
38959	2	39375	43904	LCS		Tritium by Liq Sct column prep
38959	4	39375	43904	DUP	W08P005622	Tritium by Liq Sct column prep
38959	3	39375	43904	MS	W08P005622	Tritium by Liq Sct column prep
38959	5	39375	43904	SAMPLE	W08P005622	Tritium by Liq Sct column prep
38966	1	39381	43914	BLANK		TC99 by Liquid Scin.
38966	2	39381	43914	LCS		TC99 by Liquid Scin.
38966	4	39381	43914	DUP	W08P005571	TC99 by Liquid Scin.
38966	3	39381	43914	MS	W08P005571	TC99 by Liquid Scin.
38966	9	39381	43914	SAMPLE	W08P005618	TC99 by Liquid Scin.
38966	10	39381	43914	SAMPLE	W08P005619	TC99 by Liquid Scin.
38966	11	39381	43914	SAMPLE	W08P005620	TC99 by Liquid Scin.
38966	12	39381	43914	SAMPLE	W08P005622	TC99 by Liquid Scin.
38983	1	39398	43937	BLANK		Strontium 89/90
38983	2	39398	43937	LCS		Strontium 89/90
38983	3	39398	43937	DUP	W08P005611	Strontium 89/90
38983	8	39398	43937	SAMPLE	W08P005622	Strontium 89/90
38983	9	39398	43937	SURR	W08P005622	Strontium 89/90

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-531-411	LA-531-411: ALKALINITY (TITRIMETRIC) HEIS 2320B Alkalinity Standard Methods 2320B Alkalinity
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

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: 13-jan-2009
Report #: WSCF20082385
Report WGPPM/5.2

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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.

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

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: 13-jan-2009
Report #: WSCF20082385
Report WGPPM/5.2

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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.

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	Protium 89/90
LA-508-421	LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER
HEIS ALPHA_LSC	A/B Liquid Scintillation
HEIS BETA_LSC	A/B Liquid Scintillation
HEIS TC99_3MDSK_LSC	TC99 by Liquid Scintillation
HEIS TRITIUM_EIE_LSC	Tritium Liquid Scintillation

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: 13-jan-2009
Report#: WSCF20082385
Report WGPPM/5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005615

Client ID: B1Y0N2

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H2O P Prep											12/18/08
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.03e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		4.67e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	B	6.70	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		2.68e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		43.4	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	18.6	ug/L			1.00	12		01/02/09
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		3.45e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		219	ug/L			1.00	4.0		01/02/09
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005616

Client ID: B1Y0M8

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H2O P Prep											12/18/08
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.74e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	B	7.30	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		5.45e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		3.57e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		74.5	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411		514	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	U	< 12.0	ug/L			1.00	12		01/02/09
Zinc	7440-66-6	LA-505-411	B	24.6	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		5.88e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		348	ug/L			1.00	4.0		01/02/09
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005617

Client ID: B1Y0N6

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H2O P Prep											
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.34e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		4.65e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		2.36e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		37.5	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411		261	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	25.7	ug/L			1.00	12		01/02/09
Zinc	7440-68-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		4.14e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-8	LA-505-411		242	ug/L			1.00	4.0		01/02/09
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09

MDL=Minimum Detection Limit

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: W09-012
Sample # W08P005618
Client ID: B1Y0N3 PNNL-GPP
 WSCF

Matrix: WATER

Group #: WSCF20082385
Department: Inorganic
Sampled: 12/11/08
Received: 12/11/08

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	D	0.277	mg/L			2.00	0.046		12/11/08
Chloride	16887-00-6	LA-533-410	D	15.3	mg/L			2.00	0.094		12/11/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		12/11/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	15.4	mg/L			10.00	0.12		12/11/08
Sulfate	14808-79-8	LA-533-410	D	27.3	mg/L			2.00	0.26		12/11/08
ICP Metals Analysis, Grd H20 P Prep											12/18/08
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	B	91.8	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.03e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		4.62e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		2.69e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		43.3	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	28.4	ug/L			1.00	12		01/02/09
Zinc	7440-68-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		3.51e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		222	ug/L			1.00	4.0		01/02/09

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

D - Analyte was identified at a secondary dilution factor
 J - Analyte < lowest calibration but >= MDL.(org)
 U - Analyzed for but not detected above limiting criteria.

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

Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005618

Client ID: B1Y0N3

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Total Alkalinity as mg/L CaCO3											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		87.0	mg/L			1.00	1.0		12/23/08

MDL=Minimum Detection Limit

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DF=Dilution Factor

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

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

D - Analyte was identified at a secondary dilution factor

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

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005619

Client ID: B1Y0M9

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

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	D	0.193	mg/L			2.00	0.046		12/11/08
Chloride	16887-00-6	LA-533-410	D	14.8	mg/L			2.00	0.094		12/11/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		12/11/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	47.8	mg/L			10.00	0.12		12/11/08
Sulfate	14808-79-8	LA-533-410	D	27.6	mg/L			2.00	0.26		12/11/08
ICP Metals Analysis, Grd H2O P Prep											12/18/08
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	B	80.8	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.76e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	B	6.20	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	B	9.10	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		5.44e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		3.58e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		76.3	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411		534	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	21.5	ug/L			1.00	12		01/02/09
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		5.99e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		351	ug/L			1.00	4.0		01/02/09

MDL=Minimum Detection Limit

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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

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

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

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Report WGPP/ver. 5.2

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005619

Client ID: B1Y0M9

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Total Alkalinity as mg/L CaCO3											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		81.0	mg/L			1.00	1.0		12/23/08

MDL = Minimum Detection Limit

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TP Err = Total Propagated Error

DF = Dilution Factor

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005620

Client ID: B1Y0N7 PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Fluoride	18984-48-8	LA-533-410	D	0.292	mg/L			2.00	0.046		12/11/08
Chloride	16887-00-6	LA-533-410	D	7.69	mg/L			2.00	0.094		12/11/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		12/11/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	25.3	mg/L			10.00	0.12		12/11/08
Sulfate	14808-79-8	LA-533-410	D	18.7	mg/L			2.00	0.26		12/11/08
ICP Metals Analysis, Grd H2O P Prep											12/18/08
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	B	59.4	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		1.35e+04	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		4.63e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		2.34e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		01/02/09
Barium	7440-39-3	LA-505-411		38.0	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411		250	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	19.2	ug/L			1.00	12		01/02/09
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		4.12e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		242	ug/L			1.00	4.0		01/02/09

MDL=Minimum Detection Limit

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005620

Client ID: B1Y0N7

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Total Alkalinity as mg/L CaCO3											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		92.0	mg/L			1.00	1.0		12/23/08

MDL=Minimum Detection Limit

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DF=Dilution Factor

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I09-012
Sample # W08P005621
Client ID: B1XY42

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385
Department: Inorganic
Sampled: 12/11/08
Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H2O P Prep											
ICP Metals Analysis, Grd H2O P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		12/19/08
Magnesium	7439-95-4	LA-505-411		8.31e+03	ug/L			1.00	50		12/19/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		12/19/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		12/19/08
Potassium	7440-09-7	LA-505-411		4.32e+03	ug/L			1.00	1.7e+02		12/19/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		12/19/08
Sodium	7440-23-5	LA-505-411		2.73e+04	ug/L			1.00	51		12/19/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		12/19/08
Barium	7440-39-3	LA-505-411		49.3	ug/L			1.00	4.0		12/19/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		12/19/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		12/19/08
Cobalt	7440-48-4	LA-505-411	B	4.20	ug/L			1.00	4.0		12/19/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		12/19/08
Vanadium	7440-62-2	LA-505-411	B	21.1	ug/L			1.00	12		12/19/08
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		12/19/08
Calcium	7440-70-2	LA-505-411		2.64e+04	ug/L			1.00	73		12/19/08
Strontium	7440-24-6	LA-505-411		176	ug/L			1.00	4.0		12/19/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		12/19/08
ICP-200.8 MS All possible meta Prep											
ICP-200.8 MS All possible meta											
Arsenic	7440-38-2	LA-505-412		4.03	ug/L			1.00	0.400		12/31/08

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

D - Analyte was identified at a secondary dilution factor
 J - Analyte < lowest calibration but >= MDL.(org)
 U - Analyzed for but not detected above limiting criteria.

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

Report WGPP/ver. 5.2
 GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I09-012

Sample # W08P005622

Client ID: B1XY43

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

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	D	0.228	mg/L			2.00	0.046		12/11/08
Chloride	16887-00-6	LA-533-410	D	6.37	mg/L			2.00	0.094		12/11/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		12/11/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	11.0	mg/L			10.00	0.12		12/11/08
Sulfate	14808-79-8	LA-533-410	D	23.1	mg/L			2.00	0.26		12/11/08
ICP Metals Analysis, Grd H20 P Prep											12/18/08
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	B	73.9	ug/L			1.00	25		01/02/09
Magnesium	7439-95-4	LA-505-411		8.43e+03	ug/L			1.00	50		01/02/09
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Nickel	7440-02-0	LA-505-411	B	6.60	ug/L			1.00	4.0		01/02/09
Potassium	7440-09-7	LA-505-411		3.98e+03	ug/L			1.00	1.7e+02		01/02/09
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		01/02/09
Sodium	7440-23-5	LA-505-411		2.57e+04	ug/L			1.00	51		01/02/09
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	58		01/02/09
Barium	7440-39-3	LA-505-411		50.7	ug/L			1.00	4.0		01/02/09
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Chromium	7440-47-3	LA-505-411	B	18.9	ug/L			1.00	13		01/02/09
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		01/02/09
Vanadium	7440-62-2	LA-505-411	B	19.1	ug/L			1.00	12		01/02/09
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		01/02/09
Calcium	7440-70-2	LA-505-411		2.67e+04	ug/L			1.00	73		01/02/09
Strontium	7440-24-6	LA-505-411		188	ug/L			1.00	4.0		01/02/09

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I09-012

Sample # W08P005622

Client ID: B1XY43

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		01/02/09
ICP-200.8 MS All possible meta Prep											
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412		3.49	ug/L			1.00	0.0500		12/30/08
Arsenic	7440-38-2	LA-505-412		3.98	ug/L			1.00	0.400		12/30/08

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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

Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005624

Client ID: B1X0P2 PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Inorganic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Total Alkalinity as mg/L CaCO₃											
Total Alkalinity as mg/L CaCO ₃	ALKALINITY	LA-531-411		88.0	mg/L			1.00	1.0		12/23/08

MDL=Minimum Detection Limit

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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

Report WGPP/ver. 5.2

GPAP

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20082385
 Matrix: WATER
 Test: Anions by Ion Chromatography

Sample Date: 12/10/08
 Receive Date: 12/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005483											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	11.4125		RPD			0.404	20.000		12/11/08
DUP	Fluoride	16984-48-8	0.3923		RPD			4.461	20.000		12/11/08
DUP	Nitrogen in Nitrite	NO2-N	<2.56e-2		RPD			n/a	20.000	U	12/11/08
DUP	Nitrogen in Nitrate	NO3-N	10.4732		RPD			0.118	20.000		12/11/08
DUP	Sulfate	14808-79-8	40.717		RPD			0.306	20.000		12/11/08
MS	Chloride	16887-00-6	1.07215	108.848	% Recov	80.000	120.000				12/11/08
MS	Fluoride	16984-48-8	0.5019	99.386	% Recov	80.000	120.000				12/11/08
MS	Nitrogen in Nitrite	NO2-N	0.42275	85.925	% Recov	80.000	120.000				12/11/08
MS	Nitrogen in Nitrate	NO3-N	0.3956	88.899	% Recov	80.000	120.000				12/11/08
MS	Sulfate	14808-79-8	1.7335	87.551	% Recov	80.000	120.000				12/11/08
MSD	Chloride	16887-00-6	1.07955	109.599	% Recov	80.000	120.000				12/11/08
MSD	Fluoride	16984-48-8	0.52335	103.634	% Recov	80.000	120.000				12/11/08
MSD	Nitrogen in Nitrite	NO2-N	0.4272	86.829	% Recov	80.000	120.000				12/11/08
MSD	Nitrogen in Nitrate	NO3-N	0.3959	88.966	% Recov	80.000	120.000				12/11/08
MSD	Sulfate	14808-79-8	1.8373	92.793	% Recov	80.000	120.000				12/11/08
SPK-RPD	Chloride	16887-00-6	109.599		RPD			0.688	20.000		12/11/08
SPK-RPD	Fluoride	16984-48-8	103.634		RPD			4.185	20.000		12/11/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	86.829		RPD			1.047	20.000		12/11/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	88.966		RPD			0.075	20.000		12/11/08
SPK-RPD	Sulfate	14808-79-8	92.793		RPD			5.813	20.000		12/11/08
BATCH QC											
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	12/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 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
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	12/11/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	12/11/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	12/11/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	12/11/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	12/11/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	12/11/08
LCS	Chloride	16887-00-6	196.0634	98.524	% Recov	80.000	120.000				12/11/08
LCS	Fluoride	16984-48-8	103.3356	101.309	% Recov	80.000	120.000				12/11/08
LCS	Nitrogen in Nitrite	NO2-N	99.4189	100.019	% Recov	80.000	120.000				12/11/08
LCS	Nitrogen in Nitrate	NO3-N	93.0997	103.559	% Recov	80.000	120.000				12/11/08
LCS	Sulfate	14808-79-8	396.784	99.196	% Recov	80.000	120.000				12/11/08

Lab ID: W08P005612
 BATCH QC ASSOCIATED WITH SAMPLE

DUP	Chloride	16887-00-6	4.1993		RPD			0.451	20.000		12/11/08
DUP	Fluoride	16984-48-8	<4.64e-2		RPD			n/a	20.000	U	12/11/08
DUP	Nitrogen in Nitrite	NO2-N	<2.56e-2		RPD			n/a	20.000	U	12/11/08
DUP	Nitrogen in Nitrate	NO3-N	1.476		RPD			0.775	20.000		12/11/08
DUP	Sulfate	14808-79-8	22.6103		RPD			0.608	20.000		12/11/08
MS	Chloride	16887-00-6	1.0008	101.604	% Recov	80.000	120.000				12/11/08
MS	Fluoride	16984-48-8	0.4931	97.644	% Recov	80.000	120.000				12/11/08
MS	Nitrogen in Nitrite	NO2-N	0.4701	95.549	% Recov	80.000	120.000				12/11/08
MS	Nitrogen in Nitrate	NO3-N	0.45935	103.225	% Recov	80.000	120.000				12/11/08
MS	Sulfate	14808-79-8	2.00135	101.078	% Recov	80.000	120.000				12/11/08
MSD	Chloride	16887-00-6	0.98235	99.731	% Recov	80.000	120.000				12/11/08
MSD	Fluoride	16984-48-8	0.4302	85.188	% Recov	80.000	120.000				12/11/08
MSD	Nitrogen in Nitrite	NO2-N	0.48195	97.957	% Recov	80.000	120.000				12/11/08
MSD	Nitrogen in Nitrate	NO3-N	0.432	97.079	% Recov	80.000	120.000				12/11/08
MSD	Sulfate	14808-79-8	2.0075	101.389	% Recov	80.000	120.000				12/11/08
SPK-RPD	Chloride	16887-00-6	99.731		RPD			1.861	20.000		12/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: Anions by Ion Chromatography

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Fluoride	16984-48-8	85.188		RPD			13.626	20.000		12/11/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	97.957		RPD			2.489	20.000		12/11/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	97.079		RPD			6.137	20.000		12/11/08
SPK-RPD	Sulfate	14808-79-8	101.389		RPD			0.307	20.000		12/11/08
BATCH QC											
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	12/11/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	12/11/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	12/11/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	12/11/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	12/11/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	12/11/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	12/11/08
LCS	Chloride	16887-00-6	207.3259	104.184	% Recov	80.000	120.000				12/11/08
LCS	Fluoride	16984-48-8	109.7663	107.614	% Recov	80.000	120.000				12/11/08
LCS	Nitrogen in Nitrite	NO2-N	100.629	101.236	% Recov	80.000	120.000				12/11/08
LCS	Nitrogen in Nitrate	NO3-N	95.1539	105.844	% Recov	80.000	120.000				12/11/08
LCS	Sulfate	14808-79-8	417.8937	104.473	% Recov	80.000	120.000				12/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005659											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Silver	7440-22-4	987.6	98.760	% Recov	75.000	125.000				12/19/08
MS	Barium	7440-39-3	491	98.200	% Recov	75.000	125.000				12/19/08
MS	Beryllium	7440-41-7	532.4	106.480	% Recov	75.000	125.000				12/19/08
MS	Calcium	7440-70-2	1970	197.000	% Recov	75.000	125.000				12/19/08
MS	Cadmium	7440-43-9	1017	101.700	% Recov	75.000	125.000				12/19/08
MS	Cobalt	7440-48-4	1013	101.300	% Recov	75.000	125.000				12/19/08
MS	Chromium	7440-47-3	1001	100.100	% Recov	75.000	125.000				12/19/08
MS	Copper	7440-50-8	1015	101.500	% Recov	75.000	125.000				12/19/08
MS	Iron	7439-89-6	1003	100.300	% Recov	75.000	125.000				12/19/08
MS	Potassium	7440-09-7	10660	106.600	% Recov	75.000	125.000				12/19/08
MS	Magnesium	7439-95-4	1100	110.000	% Recov	75.000	125.000				12/19/08
MS	Manganese	7439-96-5	1004	100.400	% Recov	75.000	125.000				12/19/08
MS	Sodium	7440-23-5	720	72.000	% Recov	75.000	125.000				12/19/08
MS	Nickel	7440-02-0	994.6	99.460	% Recov	75.000	125.000				12/19/08
MS	Antimony	7440-36-0	1009	100.900	% Recov	75.000	125.000				12/19/08
MS	Strontium	7440-24-6	539	107.800	% Recov	75.000	125.000				12/19/08
MS	Vanadium	7440-62-2	997.5	99.750	% Recov	75.000	125.000				12/19/08
MS	Zinc	7440-66-6	1032	103.200	% Recov	75.000	125.000				12/19/08
MSD	Silver	7440-22-4	979.9	97.990	% Recov	75.000	125.000				12/19/08
MSD	Barium	7440-39-3	485.4	97.080	% Recov	75.000	125.000				12/19/08
MSD	Beryllium	7440-41-7	529.9	105.980	% Recov	75.000	125.000				12/19/08
MSD	Calcium	7440-70-2	2880	288.000	% Recov	75.000	125.000				12/19/08
MSD	Cadmium	7440-43-9	1011	101.100	% Recov	75.000	125.000				12/19/08
MSD	Cobalt	7440-48-4	1003	100.300	% Recov	75.000	125.000				12/19/08
MSD	Chromium	7440-47-3	977.7	97.770	% Recov	75.000	125.000				12/19/08
MSD	Copper	7440-50-8	1010	101.000	% Recov	75.000	125.000				12/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Iron	7439-89-6	1007	100.700	% Recov	75.000	125.000				12/19/08
MSD	Potassium	7440-09-7	10910	109.100	% Recov	75.000	125.000				12/19/08
MSD	Magnesium	7439-95-4	1360	136.000	% Recov	75.000	125.000				12/19/08
MSD	Manganese	7439-96-5	992.6	99.260	% Recov	75.000	125.000				12/19/08
MSD	Sodium	7440-23-5	980	98.000	% Recov	75.000	125.000				12/19/08
MSD	Nickel	7440-02-0	989.6	98.960	% Recov	75.000	125.000				12/19/08
MSD	Antimony	7440-36-0	1041	104.100	% Recov	75.000	125.000				12/19/08
MSD	Strontium	7440-24-6	533.5	106.700	% Recov	75.000	125.000				12/19/08
MSD	Vanadium	7440-62-2	986.1	98.610	% Recov	75.000	125.000				12/19/08
MSD	Zinc	7440-66-6	1025	102.500	% Recov	75.000	125.000				12/19/08
SPK-RPD	Silver	7440-22-4	97.990		RPD			0.783	20.000		12/19/08
SPK-RPD	Barium	7440-39-3	97.080		RPD			1.147	20.000		12/19/08
SPK-RPD	Beryllium	7440-41-7	105.980		RPD			0.471	20.000		12/19/08
SPK-RPD	Calcium	7440-70-2	288.000		RPD			37.526	20.000		12/19/08
SPK-RPD	Cadmium	7440-43-9	101.100		RPD			0.592	20.000		12/19/08
SPK-RPD	Cobalt	7440-48-4	100.300		RPD			0.992	20.000		12/19/08
SPK-RPD	Chromium	7440-47-3	97.770		RPD			2.355	20.000		12/19/08
SPK-RPD	Copper	7440-50-8	101.000		RPD			0.494	20.000		12/19/08
SPK-RPD	Iron	7439-89-6	100.700		RPD			0.398	20.000		12/19/08
SPK-RPD	Potassium	7440-09-7	109.100		RPD			2.318	20.000		12/19/08
SPK-RPD	Magnesium	7439-95-4	136.000		RPD			21.138	20.000		12/19/08
SPK-RPD	Manganese	7439-96-5	99.260		RPD			1.142	20.000		12/19/08
SPK-RPD	Sodium	7440-23-5	98.000		RPD			30.588	20.000		12/19/08
SPK-RPD	Nickel	7440-02-0	98.960		RPD			0.504	20.000		12/19/08
SPK-RPD	Antimony	7440-36-0	104.100		RPD			3.122	20.000		12/19/08
SPK-RPD	Strontium	7440-24-6	106.700		RPD			1.026	20.000		12/19/08
SPK-RPD	Vanadium	7440-62-2	98.610		RPD			1.149	20.000		12/19/08
SPK-RPD	Zinc	7440-66-6	102.500		RPD			0.681	20.000		12/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

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	Silver	7440-22-4	<5	n/a	ug/L					U	12/19/08
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	12/19/08
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	12/19/08
BLANK	Calcium	7440-70-2	<73	n/a	ug/L					U	12/19/08
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	12/19/08
BLANK	Cobalt	7440-48-4	<4	n/a	ug/L					U	12/19/08
BLANK	Chromium	7440-47-3	<13	n/a	ug/L					U	12/19/08
BLANK	Copper	7440-50-8	<6	n/a	ug/L					U	12/19/08
BLANK	Iron	7439-89-6	<25	n/a	ug/L					U	12/19/08
BLANK	Potassium	7440-09-7	<170	n/a	ug/L					U	12/19/08
BLANK	Magnesium	7439-95-4	<50	n/a	ug/L					U	12/19/08
BLANK	Manganese	7439-96-5	<4	n/a	ug/L					U	12/19/08
BLANK	Sodium	7440-23-5	<51	n/a	ug/L					U	12/19/08
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	12/19/08
BLANK	Antimony	7440-36-0	<58	n/a	ug/L					U	12/19/08
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	12/19/08
BLANK	Vanadium	7440-82-2	<12	n/a	ug/L					U	12/19/08
BLANK	Zinc	7440-66-6	<9	n/a	ug/L					U	12/19/08
LCS	Silver	7440-22-4	979.5	97.950	% Recov	80.000	120.000				12/19/08
LCS	Barium	7440-39-3	469.4	93.880	% Recov	80.000	120.000				12/19/08
LCS	Beryllium	7440-41-7	542.9	108.580	% Recov	80.000	120.000				12/19/08
LCS	Calcium	7440-70-2	1157	115.700	% Recov	80.000	120.000				12/19/08
LCS	Cadmium	7440-43-9	1044	104.400	% Recov	80.000	120.000				12/19/08
LCS	Cobalt	7440-48-4	1057	105.700	% Recov	80.000	120.000				12/19/08
LCS	Chromium	7440-47-3	1020	102.000	% Recov	80.000	120.000				12/19/08
LCS	Copper	7440-50-8	998.2	99.820	% Recov	80.000	120.000				12/19/08
LCS	Iron	7439-89-6	1002	100.200	% Recov	80.000	120.000				12/19/08
LCS	Potassium	7440-09-7	10440	104.400	% Recov	80.000	120.000				12/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date:
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Magnesium	7439-95-4	993.4	99.340	% Recov	80.000	120.000				12/19/08
LCS	Manganese	7439-96-5	1018	101.800	% Recov	80.000	120.000				12/19/08
LCS	Sodium	7440-23-5	1001	100.100	% Recov	80.000	120.000				12/19/08
LCS	Nickel	7440-02-0	1049	104.900	% Recov	80.000	120.000				12/19/08
LCS	Antimony	7440-36-0	1036	103.800	% Recov	80.000	120.000				12/19/08
LCS	Strontium	7440-24-6	501.1	100.220	% Recov	80.000	120.000				12/19/08
LCS	Vanadium	7440-62-2	1003	100.300	% Recov	80.000	120.000				12/19/08
LCS	Zinc	7440-66-6	1056	105.600	% Recov	80.000	120.000				12/19/08

Lab ID: W08P005605
 BATCH QC ASSOCIATED WITH SAMPLE

MS	Silver	7440-22-4	1022	102.200	% Recov	75.000	125.000				01/02/09
MS	Barium	7440-39-3	511.4	102.280	% Recov	75.000	125.000				01/02/09
MS	Beryllium	7440-41-7	547.6	109.520	% Recov	75.000	125.000				01/02/09
MS	Calcium	7440-70-2	1800	160.000	% Recov	75.000	125.000				01/02/09
MS	Cadmium	7440-43-9	1039	103.900	% Recov	75.000	125.000				01/02/09
MS	Cobalt	7440-48-4	995.1	99.510	% Recov	75.000	125.000				01/02/09
MS	Chromium	7440-47-3	1029.1	102.910	% Recov	75.000	125.000				01/02/09
MS	Copper	7440-50-8	1022	102.200	% Recov	75.000	125.000				01/02/09
MS	Iron	7439-89-6	1050.8	105.080	% Recov	75.000	125.000				01/02/09
MS	Potassium	7440-09-7	10240	102.400	% Recov	75.000	125.000				01/02/09
MS	Magnesium	7439-95-4	1100	110.000	% Recov	75.000	125.000				01/02/09
MS	Manganese	7439-96-5	1045	104.500	% Recov	75.000	125.000				01/02/09
MS	Sodium	7440-23-5	2710	271.000	% Recov	75.000	125.000				01/02/09
MS	Nickel	7440-02-0	982.6	98.260	% Recov	75.000	125.000				01/02/09
MS	Antimony	7440-36-0	1044	104.400	% Recov	75.000	125.000				01/02/09
MS	Strontium	7440-24-6	557	111.400	% Recov	75.000	125.000				01/02/09
MS	Vanadium	7440-62-2	1028	102.800	% Recov	75.000	125.000				01/02/09
MS	Zinc	7440-66-6	1031	103.100	% Recov	75.000	125.000				01/02/09
MSD	Silver	7440-22-4	1012	101.200	% Recov	75.000	125.000				01/02/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 12/10/08
 Receive Date: 12/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Barium	7440-39-3	503	100.600	% Recov	75.000	125.000				01/02/09
MSD	Beryllium	7440-41-7	538.6	107.720	% Recov	75.000	125.000				01/02/09
MSD	Calcium	7440-70-2	400	40.000	% Recov	75.000	125.000				01/02/09
MSD	Cadmium	7440-43-9	1030	103.000	% Recov	75.000	125.000				01/02/09
MSD	Cobalt	7440-48-4	993	99.300	% Recov	75.000	125.000				01/02/09
MSD	Chromium	7440-47-3	1001.1	100.110	% Recov	75.000	125.000				01/02/09
MSD	Copper	7440-50-8	1008	100.800	% Recov	75.000	125.000				01/02/09
MSD	Iron	7439-89-6	1024.8	102.480	% Recov	75.000	125.000				01/02/09
MSD	Potassium	7440-09-7	10050	100.500	% Recov	75.000	125.000				01/02/09
MSD	Magnesium	7439-95-4	850	85.000	% Recov	75.000	125.000				01/02/09
MSD	Manganese	7439-96-5	1030	103.000	% Recov	75.000	125.000				01/02/09
MSD	Sodium	7440-23-5	80	8.000	% Recov	75.000	125.000				01/02/09
MSD	Nickel	7440-02-0	975.5	97.550	% Recov	75.000	125.000				01/02/09
MSD	Antimony	7440-36-0	1039	103.900	% Recov	75.000	125.000				01/02/09
MSD	Strontium	7440-24-6	541	108.200	% Recov	75.000	125.000				01/02/09
MSD	Vanadium	7440-62-2	1017	101.700	% Recov	75.000	125.000				01/02/09
MSD	Zinc	7440-66-6	1028	102.800	% Recov	75.000	125.000				01/02/09
SPK-RPD	Silver	7440-22-4	101.200		RPD			0.983	20.000		01/02/09
SPK-RPD	Barium	7440-39-3	100.600		RPD			1.656	20.000		01/02/09
SPK-RPD	Beryllium	7440-41-7	107.720		RPD			1.657	20.000		01/02/09
SPK-RPD	Calcium	7440-70-2	40.000		RPD			120.000	20.000		01/02/09
SPK-RPD	Cadmium	7440-43-9	103.000		RPD			0.870	20.000		01/02/09
SPK-RPD	Cobalt	7440-48-4	99.300		RPD			0.211	20.000		01/02/09
SPK-RPD	Chromium	7440-47-3	100.110		RPD			2.758	20.000		01/02/09
SPK-RPD	Copper	7440-50-8	100.800		RPD			1.379	20.000		01/02/09
SPK-RPD	Iron	7439-89-6	102.480		RPD			2.505	20.000		01/02/09
SPK-RPD	Potassium	7440-09-7	100.500		RPD			1.873	20.000		01/02/09
SPK-RPD	Magnesium	7439-95-4	85.000		RPD			25.641	20.000		01/02/09
SPK-RPD	Manganese	7439-96-5	103.000		RPD			1.446	20.000		01/02/09
SPK-RPD	Sodium	7440-23-5	8.000		RPD			188.530	20.000		01/02/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date: 12/10/08
 Receive Date: 12/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Nickel	7440-02-0	97.550		RPD			0.725	20.000		01/02/09
SPK-RPD	Antimony	7440-36-0	103.900		RPD			0.480	20.000		01/02/09
SPK-RPD	Strontium	7440-24-6	108.200		RPD			2.914	20.000		01/02/09
SPK-RPD	Vanadium	7440-62-2	101.700		RPD			1.076	20.000		01/02/09
SPK-RPD	Zinc	7440-66-6	102.800		RPD			0.291	20.000		01/02/09
BATCH QC											
BLANK	Silver	7440-22-4	<5	n/a	ug/L					U	01/02/09
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	01/02/09
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	01/02/09
BLANK	Calcium	7440-70-2	<73	n/a	ug/L					U	01/02/09
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	01/02/09
BLANK	Cobalt	7440-48-4	<4	n/a	ug/L					U	01/02/09
BLANK	Chromium	7440-47-3	<13	n/a	ug/L					U	01/02/09
BLANK	Copper	7440-50-8	<6	n/a	ug/L					U	01/02/09
BLANK	Iron	7439-89-6	<25	n/a	ug/L					U	01/02/09
BLANK	Potassium	7440-09-7	<170	n/a	ug/L					U	01/02/09
BLANK	Magnesium	7439-95-4	<50	n/a	ug/L					U	01/02/09
BLANK	Manganese	7439-96-5	<4	n/a	ug/L					U	01/02/09
BLANK	Sodium	7440-23-5	<51	n/a	ug/L					U	01/02/09
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	01/02/09
BLANK	Antimony	7440-36-0	<56	n/a	ug/L					U	01/02/09
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	01/02/09
BLANK	Vanadium	7440-62-2	<12	n/a	ug/L					U	01/02/09
BLANK	Zinc	7440-66-6	<9	n/a	ug/L					U	01/02/09
LCS	Silver	7440-22-4	965.1	96.510	% Recov	80.000	120.000				01/02/09
LCS	Barium	7440-39-3	460.3	92.060	% Recov	80.000	120.000				01/02/09
LCS	Beryllium	7440-41-7	543.7	108.740	% Recov	80.000	120.000				01/02/09
LCS	Calcium	7440-70-2	924.6	92.460	% Recov	80.000	120.000				01/02/09
LCS	Cadmium	7440-43-9	1042	104.200	% Recov	80.000	120.000				01/02/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP Metals Analysis, Grd H2O P

Sample Date:
 Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Cobalt	7440-48-4	1020	102.000	% Recov	80.000	120.000				01/02/09
LCS	Chromium	7440-47-3	987.9	98.790	% Recov	80.000	120.000				01/02/09
LCS	Copper	7440-50-8	1014	101.400	% Recov	80.000	120.000				01/02/09
LCS	Iron	7439-89-6	1001	100.100	% Recov	80.000	120.000				01/02/09
LCS	Potassium	7440-09-7	10580	105.800	% Recov	80.000	120.000				01/02/09
LCS	Magnesium	7439-95-4	991.6	99.160	% Recov	80.000	120.000				01/02/09
LCS	Manganese	7439-96-5	996	99.600	% Recov	80.000	120.000				01/02/09
LCS	Sodium	7440-23-5	1008	100.800	% Recov	80.000	120.000				01/02/09
LCS	Nickel	7440-02-0	1032	103.200	% Recov	80.000	120.000				01/02/09
LCS	Antimony	7440-36-0	1032	103.200	% Recov	80.000	120.000				01/02/09
LCS	Strontium	7440-24-6	498.4	99.680	% Recov	80.000	120.000				01/02/09
LCS	Vanadium	7440-62-2	982.9	98.290	% Recov	80.000	120.000				01/02/09
LCS	Zinc	7440-66-6	1043	104.300	% Recov	80.000	120.000				01/02/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: ICP-200.8 MS All possible meta

Sample Date: 11/24/08
 Receive Date: 11/24/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005207											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Arsenic	7440-38-2	42.8	107.000	% Recov	70.000	130.000				12/30/08
MS	Uranium	7440-81-1	45.734	114.335	% Recov	70.000	130.000				12/30/08
MSD	Arsenic	7440-38-2	41.48	103.700	% Recov	70.000	130.000				12/30/08
MSD	Uranium	7440-81-1	44.454	111.135	% Recov	70.000	130.000				12/30/08
SPK-RPD	Arsenic	7440-38-2	103.700		RPD			3.132	20.000		12/31/08
SPK-RPD	Uranium	7440-81-1	111.135		RPD			2.839	20.000		12/31/08
Lab ID: W08P005540											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Arsenic	7440-38-2	41.2	103.000	% Recov	70.000	130.000				12/30/08
MS	Uranium	7440-81-1	44.527	111.317	% Recov	70.000	130.000				12/30/08
MSD	Arsenic	7440-38-2	40.62	101.550	% Recov	70.000	130.000				12/30/08
MSD	Uranium	7440-81-1	43.997	109.993	% Recov	70.000	130.000				12/30/08
SPK-RPD	Arsenic	7440-38-2	101.550		RPD			1.418	20.000		12/31/08
SPK-RPD	Uranium	7440-81-1	109.993		RPD			1.197	20.000		12/31/08
Lab ID: W08P005622											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Arsenic	7440-38-2	40.94	102.350	% Recov	70.000	130.000				12/30/08
MS	Uranium	7440-81-1	44.043	110.108	% Recov	70.000	130.000				12/30/08
MSD	Arsenic	7440-38-2	40.46	101.150	% Recov	70.000	130.000				12/30/08
MSD	Uranium	7440-81-1	43.883	109.707	% Recov	70.000	130.000				12/30/08
SPK-RPD	Arsenic	7440-38-2	101.150		RPD			1.179	20.000		12/31/08
SPK-RPD	Uranium	7440-81-1	109.707		RPD			0.365	20.000		12/31/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 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
BATCH QC											
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	12/30/08
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	12/30/08
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	12/30/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	12/30/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	12/30/08
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	12/30/08
LCS	Arsenic	7440-38-2	39.13	97.825	% Recov	85.000	115.000				12/30/08
LCS	Arsenic	7440-38-2	39.57	98.925	% Recov	85.000	115.000				12/30/08
LCS	Arsenic	7440-38-2	39.55	98.875	% Recov	85.000	115.000				12/30/08
LCS	Uranium	7440-61-1	40.28	100.700	% Recov	85.000	115.000				12/30/08
LCS	Uranium	7440-61-1	40.72	101.800	% Recov	85.000	115.000				12/30/08
LCS	Uranium	7440-61-1	40.23	100.575	% Recov	85.000	115.000				12/30/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20082385
 Matrix: WATER
 Test: Total Alkalinity as mg/L CaCO₃

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005618											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Total Alkalinity as mg/L CaCO ₃	ALKALINITY	87.39					0.206	20.000		12/23/08
BATCH QC											
LCS	Total Alkalinity as mg/L CaCO ₃	ALKALINITY	32.28	108.322	%Recover	80.000	120.000				12/23/08
LCS	Total Alkalinity as mg/L CaCO ₃	ALKALINITY	33.53	112.517	%Recover	80.000	120.000				12/23/08
LCS	Total Alkalinity as mg/L CaCO ₃	ALKALINITY	33.54	112.550	%Recover	80.000	120.000				12/23/08

WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20082385
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-AES: [Sample W08P5621] Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, calcium, and sodium linearity because sample results are greater than the calibration standard. Sample result < 5X MDL; "B" flag.</p> <p>VOA: Spike Recovery high in the MSD for 1,1-Dichloroethene at 120%. Disregard the Acetone found in the samples since it was lower than in the Blank. gar</p> <p>H-3 LCS recovery is slightly low. All other checks are good and the batch has been approved.</p> <p>ICP-AES: [Samples W08P5615-5620; 5622] No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard. Sample results < 5X MDL; "B" flag.</p>

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

VALTEST - Test Validation
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I09-012

Sample # W08P005622

Client ID: B1XY43

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Organic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
VOA Ground Water Protection											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Carbon tetrachloride	56-23-5	LA-523-455		17.0	ug/L			1.00	1.0		12/17/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Methylenechloride	75-09-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		12/17/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		12/17/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

* - Indicates results that have NOT been validated;

+ - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I09-012

Sample # W08P005622

Client ID: B1XY43

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Organic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Ethyl cyanide	107-12-0	LA-523-455	U	< 2.00	ug/L			1.00	2.0		12/17/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08

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)

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

D - Analyte was identified at a secondary dilution factor

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

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S09-011
Sample # W08P005623
Client ID: B1XWD4

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385
Department: Organic
Sampled: 12/11/08
Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
VOA Ground Water Protection											
1,1-Dichloroethene	75-35-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Trichloroethene	79-01-8	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Carbon tetrachloride	58-23-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
Methylenechloride	75-09-2	LA-523-455	J	3.60	ug/L			1.00	1.0		12/17/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		12/17/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		12/17/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08

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

D - Analyte was identified at a secondary dilution factor
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* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2
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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: S09-011

Sample # W08P005623

Client ID: B1XWD4 PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Organic

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Ethyl cyanide	107-12-0	LA-523-455	U	< 2.00	ug/L			1.00	2.0		12/17/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		12/17/08

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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Report WGPP/ver. 5.2

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WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20082385
 Matrix: WATER
 Test: VOA Ground Water Protection

Sample Date: 12/04/08
 Receive Date: 12/04/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005359											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	1,1-Dichloroethene	75-35-4	28.400	114.000	% Recov	63.000	117.000				12/16/08
MS	Benzene	71-43-2	25.600	102.000	% Recov	75.000	129.000				12/16/08
MS	4-Bromofluorobenzene(Surr)	460-00-4	48.690	97.400	% Recov	75.000	125.000				12/16/08
MS	Chlorobenzene	108-90-7	25.980	104.000	% Recov	79.000	119.000				12/16/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	59.600	119.000	% Recov	75.000	125.000				12/16/08
MS	Toluene-d8(Surr)	2037-26-5	48.450	96.900	% Recov	75.000	125.000				12/16/08
MS	Toluene	108-88-3	26.380	106.000	% Recov	76.000	120.000				12/16/08
MS	Trichloroethene	79-01-6	21.870	87.500	% Recov	73.000	123.000				12/16/08
MSD	1,1-Dichloroethene	75-35-4	29.960	120.000	% Recov	63.000	117.000				12/16/08
MSD	Benzene	71-43-2	25.530	102.000	% Recov	75.000	129.000				12/16/08
MSD	4-Bromofluorobenzene(Surr)	460-00-4	48.900	97.800	% Recov	75.000	125.000				12/16/08
MSD	Chlorobenzene	108-90-7	25.740	103.000	% Recov	79.000	119.000				12/16/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	58.920	118.000	% Recov	75.000	125.000				12/16/08
MSD	Toluene-d8(Surr)	2037-26-5	48.830	97.700	% Recov	75.000	125.000				12/16/08
MSD	Toluene	108-88-3	26.400	106.000	% Recov	76.000	120.000				12/16/08
MSD	Trichloroethene	79-01-6	21.690	86.800	% Recov	73.000	123.000				12/16/08
SPK-RPD	1,1-Dichloroethene	75-35-4	120.000		RPD			5.128	20.000		12/16/08
SPK-RPD	Benzene	71-43-2	102.000		RPD			0.000	20.000		12/16/08
SPK-RPD	4-Bromofluorobenzene(Surr)	460-00-4	97.800		RPD			0.410	20.000		12/16/08
SPK-RPD	Chlorobenzene	108-90-7	103.000		RPD			0.966	20.000		12/16/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	118.000		RPD			0.844	20.000		12/16/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	97.700		RPD			0.822	20.000		12/16/08
SPK-RPD	Toluene	108-88-3	106.000		RPD			0.000	20.000		12/16/08
SPK-RPD	Trichloroethene	79-01-6	86.800		RPD			0.803	20.000		12/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20082385
 Matrix: WATER
 Test: VOA Ground Water Protection

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005622											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	4-Bromofluorobenzene(Surr)	460-00-4	49.340	98.700	% Recov	75.000	125.000				12/17/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	60.030	120.000	% Recov	75.000	125.000				12/17/08
SURR	Toluene-d8(Surr)	2037-26-5	49.000	98.000	% Recov	75.000	125.000				12/17/08
Lab ID: W08P005623											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	4-Bromofluorobenzene(Surr)	460-00-4	49.090	98.200	% Recov	75.000	125.000				12/17/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	60.140	120.000	% Recov	75.000	125.000				12/17/08
SURR	Toluene-d8(Surr)	2037-26-5	48.950	97.900	% Recov	75.000	125.000				12/17/08
BATCH QC											
BLANK	1,1-Dichloroethane	75-34-3	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1,1,1-Trichloroethane	71-55-6	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1,1,2-Trichloroethane	79-00-5	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1,4-Dichlorobenzene	106-46-7	< 1.0	n/a	ug/L					U	12/16/08
BLANK	1-Butanol	71-36-3	< 100	n/a	ug/L					U	12/16/08
BLANK	4-Methyl-2-Pentanone	108-10-1	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Acetone	67-64-1	100	100.000	ug/L						12/16/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	12/16/08
BLANK	4-Bromofluorobenzene(Surr)	460-00-4	49.490	99.000	% Recov	75.000	125.000				12/16/08
BLANK	Carbon disulfide	75-15-0	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Chloroform	67-66-3	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	12/16/08
BLANK	cis-1,2-Dichloroethylene	156-59-2	< 1.0	n/a	ug/L					U	12/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20082385
 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
BLANK	1,2-Dichloroethane-d4(Surr)	17060-07-0	59.130	118.000	% Recov	75.000	125.000				12/16/08
BLANK	trans-1,2-Dichloroethylene	156-60-5	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Ethylbenzene	100-41-4	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Ethyl cyanide	107-12-0	< 2.0	n/a	ug/L					U	12/16/08
BLANK	2-Butanone	78-93-3	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Methylenechloride	75-09-2	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Xylenes (total)	1330-20-7	< 1.0	n/a	ug/L	0.000	5.000			U	12/16/08
BLANK	Tetrahydrofuran	109-99-9	< 2.0	n/a	ug/L					U	12/16/08
BLANK	Toluene-d8(Surr)	2037-26-5	48.350	96.700	% Recov	75.000	125.000				12/16/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	12/16/08
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L					U	12/16/08
LCS	1,1-Dichloroethene	75-35-4	28.540	114.000	% Recov	75.000	125.000				12/17/08
LCS	Benzene	71-43-2	25.630	103.000	% Recov	75.000	125.000				12/17/08
LCS	4-Bromofluorobenzene(Surr)	480-00-4	48.810	97.600	% Recov	75.000	125.000				12/17/08
LCS	Chlorobenzene	108-90-7	25.960	104.000	% Recov	75.000	125.000				12/17/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	58.430	117.000	% Recov	75.000	125.000				12/17/08
LCS	Toluene-d8(Surr)	2037-26-5	48.150	96.300	% Recov	75.000	125.000				12/17/08
LCS	Toluene	108-88-3	26.110	104.000	% Recov	75.000	125.000				12/17/08
LCS	Trichloroethene	79-01-6	20.860	82.600	% Recov	75.000	125.000				12/17/08

WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20082385
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-AES: [Sample W08P5621] Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, calcium, and sodium linearity because sample results are greater than the calibration standard. Sample result < 5X MDL; "B" flag.</p> <p>VOA: Spike Recovery high in the MSD for 1,1-Dichloroethene at 120%. Disregard the Acetone found in the samples since it was lower than in the Blank. gar</p> <p>H-3 LCS recovery is slightly low. All other checks are good and the batch has been approved.</p> <p>ICP-AES: [Samples W08P5615-5620; 5622] No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard. Sample results < 5X MDL; "B" flag.</p>

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

VALTEST - Test Validation
LOGTEST - Login for Tests

TESTDATA - Test Data Entry

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: W09-012
Sample # W08P005618
Client ID: B1Y0N3

PNNL-GPP
 WSCF

Matrix: WATER

Group #: WSCF20082385
Department: Radiochemistry
Sampled: 12/11/08
Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
TC99 by Liquid Scin.	14133-76-7	LA-508-421		590	pCi/L	+ -118	pCi/L	1.00	5.9		12/19/08
Tc-99 by Liquid Scin.											

MDL=Minimum Detection Limit

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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

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

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

+ - Indicates more than six qualifier symbols

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005619

Client ID: B1Y0M9 PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Radiochemistry

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
TC99 by Liquid Scin.	14133-76-7	LA-508-421		1.30e+04	pCi/L	+ -2.60e+03	pCi/L	1.00	5.9		12/19/08

MDL=Minimum Detection Limit

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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

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

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

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

+ - Indicates more than six qualifier symbols

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

Report WGPP/ver. 5.2

GPAP

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: W09-012

Sample # W08P005620

Client ID: B1Y0N7 PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Radiochemistry

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
TC99 by Liquid Scin.	14133-76-7	LA-508-421		1.90e + 04	pCi/L	+ -3.80e + 03	pCi/L	1.00	5.9		12/19/08

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)

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

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

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

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

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

Report WGPP/ver. 5.2

GPAP

WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I09-012

Sample # W08P005622

Client ID: B1XY43

PNNL-GPP
WSCF

Matrix: WATER

Group #: WSCF20082385

Department: Radiochemistry

Sampled: 12/11/08

Received: 12/11/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Strontium 89/90											
Strontium-89/90	SR-RAD	LA-508-415	U	-2.10	pCi/L	+ -2.10	pCi/L	1.00	0.99		01/06/09
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		89.6	Percent			1.00	0.0		01/06/09
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421		1.10e + 03	pCi/L	+ -220	pCi/L	1.00	5.9		12/19/08
Tritium by Liq Sct column prep											
Tritium	10028-17-8	LA-508-421		2.30e + 03	pCi/L	+ -506	pCi/L	1.00	2.4e + 02		12/20/08

MDL = Minimum Detection Limit

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

* - Indicates results that have NOT been validated;

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

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

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

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

+ - Indicates more than six qualifier symbols

D - Analyte was identified at a secondary dilution factor

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

U - Analyzed for but not detected above limiting criteria.

Report WGPP/ver. 5.2

GPAP

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WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082385
 Matrix: WATER
 Test: Strontium 89/90

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005611											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Sr-85 Tracer by Beta Counting	SR85	74.8	74.800	% Recov	30.000	105.000				01/06/09
DUP	Strontium-89/90	SR-RAD	U-1.2		RPD			n/a	20.000		01/06/09
Lab ID: W08P005622											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Sr-85 Tracer by Beta Counting	SR85	89.6	89.600	% Recov	30.000	105.000				01/06/09
BATCH QC											
BLANK	Sr-85 Tracer by Beta Counting	SR85	84	84.000	% Recov	30.000	105.000				01/06/09
BLANK	Strontium-89/90	10098-97-2	U1.3E-01	n/a	pCi/L	-10.000	100.000				01/06/09
LCS	Sr-85 Tracer by Beta Counting	SR85	98.5	98.500	% Recov	30.000	105.000				01/06/09
LCS	Strontium-89/90	10098-97-2	130	94.203	% Recov	80.000	120.000				01/06/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082385
 Matrix: WATER
 Test: TC99 by Liquid Scin.

Sample Date: 12/10/08
 Receive Date: 12/10/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
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Lab ID: W08P005571
BATCH QC ASSOCIATED WITH SAMPLE

DUP	Tc-99 by Liquid Scin.	14133-76-7	3.8E + 01		RPD			12.346	20.000		12/19/08
MS	Tc-99 by Liquid Scin.	14133-76-7	662.9	104.125	% Recov	75.000	125.000				12/19/08

BATCH QC

BLANK	Tc-99 by Liquid Scin.	14133-76-7	U-2.8	n/a	pCi/L	-10.000	10.000				12/19/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	163.6	102.764	% Recov	80.000	120.000				12/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20082385
 Matrix: WATER
 Test: Tritium by Liq Sct column prep

Sample Date: 12/11/08
 Receive Date: 12/11/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P005622											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tritium	10028-17-8	2.3E+03		RPD			0.000	20.000		12/20/08
MS	Tritium	10028-17-8	20110	90.853	% Recov	75.000	125.000				12/20/08
BATCH QC											
BLANK	Tritium	10028-17-8	U-5.2E+01	n/a	pCi/L	-10.000	1000.000				12/20/08
LCS	Tritium	10028-17-8	2290.0	68.680	% Recov	80.000	120.000				12/20/08

WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20082385
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		<p>ICP-AES: [Sample W08P5621] Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, calcium, and sodium linearity because sample results are greater than the calibration standard. Sample result < 5X MDL; "B" flag.</p> <p>VOA: Spike Recovery high in the MSD for 1,1-Dichloroethene at 120%. Disregard the Acetone found in the samples since it was lower than in the Blank. gar</p> <p>H-3 LCS recovery is slightly low. All other checks are good and the batch has been approved.</p> <p>ICP-AES: [Samples W08P5615-5620; 5622] No zirconium present in the LCS standard. Magnesium, sodium, and calcium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. Check standard used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard. Sample results < 5X MDL; "B" flag.</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-09-042

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 8 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
01/26/09
 |

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP
PO#: 131280
Group#: 20082385

The following samples were received from you on 12/11/08. 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
W08P005615	B1Y0N2-	PNNL-GPP @GPP6010	Water	12/11/08
W08P005616	B1Y0M8	PNNL-GPP @GPP6010	Water	12/11/08
W08P005617	B1Y0N6	PNNL-GPP @GPP6010	Water	12/11/08
W08P005618	B1Y0N3	PNNL-GPP @GPP6010	Water	12/11/08
W08P005619	B1Y0M9	PNNL-GPP @GPP6010 @IC-30	Water @TC99-30	12/11/08
W08P005620	B1Y0N7	PNNL-GPP @GPP6010 @IC-30	Water @TC99-30	12/11/08
W08P005621	B1XY42	PNNL-GPP @2008 @GPP6010	Water	12/11/08
W08P005622	B1XY43	PNNL-GPP @2008 @GPP6010 @H3-33 @TC99-30 @VOA-GPP	Water @IC-30 @SR89_90	12/11/08
W08P005623	B1XWD4	PNNL-GPP @VOA-GPP	Water	12/11/08
W08P005624	B1X0P2	PNNL-GPP ALKALI	Water	12/11/08

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@GPP6010	ICP Metals Analysis, Grd H20 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
ALKALI	Total Alkalinity as mg/L CaCO3

