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RECEIVED SEPTEMBER 17, 2008

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

FLUOR

Memorandum

M4W41-SLF-08-1019

To:	H. Hampt	E6-35	Date:	September 17, 2008
From:	S. L. Fitzgerald, Manager WSCF Analytical Lab			

cc: w/Attachments

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

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20081773

Reference:
1) Letter of Instruction for Analytical Services for the Groundwater Performance Assessment Project and Analytical Laboratory Transition Plan, FH-0602422, September 19, 2006
2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This transmittal contains the following information for sample delivery group WSCF20081773:

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

SLF/grf

Attachments 4

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ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20081773
Data Deliverable Date: 17-sep-2008
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I08-053	B1WDT8	W08P004085	WATER
	B1WDT9	W08P004086	WATER
	B1WDV5	W08P004087	WATER
I08-055	B1WFM2	W08P004091	WATER
	B1WFN0	W08P004089	WATER
	B1WFN9	W08P004090	WATER
S08-008	B1WMT4	W08P004088	WATER

M4W41-SLF-08-1019

ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Introduction

Seven groundwater samples were received at the WSCF Laboratory on August 18, 2008. Samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

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

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

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 13 through 15, for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See pages 23 through 25 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.
- Sample results that were less than the reportable limit, however greater than the method detection limit, were B flagged.
- Duplicates, Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1WFL7 (SDG# 20081771) and B1WFN0 of this SDG. The Duplicate Relative Percent Difference (B1WFN0) slightly exceeded established laboratory limits.

All other QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See pages 26 through 29 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 Spike and Matrix Spike Duplicate were analyzed on sample# B1WJP7 (SDG# 20081765).

- Calcium, Magnesium and Sodium – Sample concentrations exceeded established laboratory limits by a factor of 4. Spike recoveries are not valid. Check standard was analyzed to ensure linearity, because the sample concentrations were 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 per the GRP Letter of Instruction. See page 30 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1WDL3 and B1WDL5 (SDG# 20081716) and B1WDX0 (SDG# 20081785).

All QC controls are within the established limits.

Organic Comments

VOA – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample, were analyzed with this delivery group per the GRP Letter of Instruction. See pages 36 through 38 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1WFL7 (SDG# 20081771).

- Sample results that were less than the lowest calibration standard, however greater than the method detection limit, were J flagged.

- Acetone and Methylene Chloride contamination detected in the Blank was evaluated and affected sample results were B flagged.

All other QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 41 through 42 for QC details. Analytical Note(s):

- Technetium-99 – Duplicate and Matrix Spike were analyzed on sample# B1WF61 (SDG# 20081765).

- Tritium – Duplicate and Matrix Spike were analyzed on sample# B1WK70 (SDG# 20081765).

All QC controls are within the established limits.

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

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Pauline D. Mix
WSCF Client Services

M4W41-SLF-08-1019

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 35 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

GPAP
Richland, WA 99352

Attention: Steve Trent E6-35

Analytical: S. Fitzgerald 9/17/08

Client Services: P.D. Mix 9/17/2008

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

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

Report#: WSCF20081773
Report Date: 16-sep-2008
Report WGPP/ver. 5.2
GPAP

w13qlog v4.2 16-sep-2008 13:51:49

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20081773

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37688	2	38122	42487	BLANK		Anions by Ion Chromatography
37688	13	38122	42487	BLANK		Anions by Ion Chromatography
37688	27	38122	42487	BLANK		Anions by Ion Chromatography
37688	3	38122	42487	LCS		Anions by Ion Chromatography
37688	14	38122	42487	LCS		Anions by Ion Chromatography
37688	5	38122	42487	DUP	W08P004083	Anions by Ion Chromatography
37688	6	38122	42487	MS	W08P004083	Anions by Ion Chromatography
37688	7	38122	42487	MSD	W08P004083	Anions by Ion Chromatography
37688	7	38122	42487	SPK-RPD	W08P004083	Anions by Ion Chromatography
37688	21	38122	42487	SAMPLE	W08P004086	Anions by Ion Chromatography
37688	11	38122	42487	SAMPLE	W08P004087	Anions by Ion Chromatography
37688	16	38122	42487	DUP	W08P004089	Anions by Ion Chromatography
37688	17	38122	42487	MS	W08P004089	Anions by Ion Chromatography
37688	18	38122	42487	MSD	W08P004089	Anions by Ion Chromatography
37688	15	38122	42487	SAMPLE	W08P004089	Anions by Ion Chromatography
37688	18	38122	42487	SPK-RPD	W08P004089	Anions by Ion Chromatography
37688	19	38122	42487	SAMPLE	W08P004090	Anions by Ion Chromatography
37688	12	38122	42487	SAMPLE	W08P004091	Anions by Ion Chromatography
37710	1	38144	42502	BLANK		ICP-200.8 MS All possible meta
37710	2	38144	42502	LCS		ICP-200.8 MS All possible meta
37710	4	38144	42502	MS	W08P003904	ICP-200.8 MS All possible meta
37710	5	38144	42502	MSD	W08P003904	ICP-200.8 MS All possible meta
37710	5	38144	42502	SPK-RPD	W08P003904	ICP-200.8 MS All possible meta
37710	7	38144	42502	MS	W08P003906	ICP-200.8 MS All possible meta
37710	8	38144	42502	MSD	W08P003906	ICP-200.8 MS All possible meta
37710	8	38144	42502	SPK-RPD	W08P003906	ICP-200.8 MS All possible meta
37710	44	38144	42502	SAMPLE	W08P004086	ICP-200.8 MS All possible meta
37710	45	38144	42502	SAMPLE	W08P004087	ICP-200.8 MS All possible meta
37710	10	38144	42502	MS	W08P004107	ICP-200.8 MS All possible meta
37710	11	38144	42502	MSD	W08P004107	ICP-200.8 MS All possible meta
37710	11	38144	42502	SPK-RPD	W08P004107	ICP-200.8 MS All possible meta
37840	1	38270	42834	BLANK		ICP Metals Analysis, Grd H20 P
37840	2	38270	42834	LCS		ICP Metals Analysis, Grd H20 P
37840	4	38270	42834	MS	W08P004052	ICP Metals Analysis, Grd H20 P
37840	5	38270	42834	MSD	W08P004052	ICP Metals Analysis, Grd H20 P
37840	5	38270	42834	SPK-RPD	W08P004052	ICP Metals Analysis, Grd H20 P
37840	18	38270	42834	SAMPLE	W08P004085	ICP Metals Analysis, Grd H20 P
37840	19	38270	42834	SAMPLE	W08P004086	ICP Metals Analysis, Grd H20 P

w13qlog v4.2 16-sep-2008 13:51:49

Department: Organic

W13q Worklist/Batch/QC Report for Group# WSCF20081773

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
			42724	BLANK		VOA Ground Water Protection
			42724	LCS		VOA Ground Water Protection
			42724	MS	W08P004043	VOA Ground Water Protection
			42724	MSD	W08P004043	VOA Ground Water Protection
			42724	SPK-RPD	W08P004043	VOA Ground Water Protection
			42724	SAMPLE	W08P004086	VOA Ground Water Protection
			42724	SURR	W08P004086	VOA Ground Water Protection
			42724	SAMPLE	W08P004088	VOA Ground Water Protection
			42724	SURR	W08P004088	VOA Ground Water Protection

w13qlog v4.2 16-sep-2008 13:51:49

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20081773

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
37827	1	38252	42704	BLANK		TC99 by Liquid Scin.
37827	4	38252	42704	LCS		TC99 by Liquid Scin.
37827	3	38252	42704	DUP	W08P004061	TC99 by Liquid Scin.
37827	2	38252	42704	MS	W08P004061	TC99 by Liquid Scin.
37827	11	38252	42704	SAMPLE	W08P004086	TC99 by Liquid Scin.
37827	12	38252	42704	SAMPLE	W08P004087	TC99 by Liquid Scin.
37799	1	38224	42713	BLANK		Tritium by Liq Sct column prep
37799	4	38224	42713	LCS		Tritium by Liq Sct column prep
37799	3	38224	42713	DUP	W08P004055	Tritium by Liq Sct column prep
37799	2	38224	42713	MS	W08P004055	Tritium by Liq Sct column prep
37799	14	38224	42713	SAMPLE	W08P004086	Tritium by Liq Sct column prep
37799	15	38224	42713	SAMPLE	W08P004087	Tritium by Liq Sct column prep

WSCF
METHOD REFERENCES REPORT

Department: Inorganic

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

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

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

WSCF
METHOD REFERENCES REPORT

Department: Organic

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

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.

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

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004085
Client ID: B1WDT8 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H20 P Prep											**08/31/08**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		09/11/08
Magnesium	7439-95-4	LA-505-411		1.08e+04	ug/L			1.00	50		09/11/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Potassium	7440-09-7	LA-505-411		4.65e+03	ug/L			1.00	1.7e+02		09/11/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		09/11/08
Sodium	7440-23-5	LA-505-411		1.77e+04	ug/L			1.00	51		09/11/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		09/11/08
Barium	7440-39-3	LA-505-411		33.5	ug/L			1.00	4.0		09/11/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		09/11/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		09/11/08
Vanadium	7440-62-2	LA-505-411	B	22.2	ug/L			1.00	12		09/11/08
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		09/11/08
Calcium	7440-70-2	LA-505-411		3.75e+04	ug/L			1.00	73		09/11/08
Strontium	7440-24-6	LA-505-411		225	ug/L			1.00	4.0		09/11/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004086
Client ID: B1WDT9 PNNL-GPP WSCF
Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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	0.284	mg/L			2.00	0.046		08/19/08
Chloride	16887-00-6	LA-533-410	D	6.64	mg/L			2.00	0.094		08/19/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		08/19/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	9.92	mg/L			2.00	0.024		08/19/08
Sulfate	14808-79-8	LA-533-410	D	23.2	mg/L			2.00	0.26		08/19/08
ICP Metals Analysis, Grd H20 P Prep											**08/31/08**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	U	< 25.0	ug/L			1.00	25		09/11/08
Magnesium	7439-95-4	LA-505-411		1.11e+04	ug/L			1.00	50		09/11/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Potassium	7440-09-7	LA-505-411		4.74e+03	ug/L			1.00	1.7e+02		09/11/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		09/11/08
Sodium	7440-23-5	LA-505-411		1.82e+04	ug/L			1.00	51		09/11/08
Antimony	7440-36-0	LA-505-411	U	< 56.0	ug/L			1.00	56		09/11/08
Barium	7440-39-3	LA-505-411		33.8	ug/L			1.00	4.0		09/11/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Chromium	7440-47-3	LA-505-411	U	< 13.0	ug/L			1.00	13		09/11/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		09/11/08
Copper	7440-50-8	LA-505-411	U	< 6.00	ug/L			1.00	6.0		09/11/08
Vanadium	7440-62-2	LA-505-411	B	30.0	ug/L			1.00	12		09/11/08
Zinc	7440-66-6	LA-505-411	U	< 9.00	ug/L			1.00	9.0		09/11/08
Calcium	7440-70-2	LA-505-411		3.84e+04	ug/L			1.00	73		09/11/08
Strontium	7440-24-6	LA-505-411		230	ug/L			1.00	4.0		09/11/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004086
Client ID: B1WDT9 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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		09/11/08
ICP-200.8 MS All possible meta Prep											**08/20/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412		139	ug/L			1.00	0.0500		08/20/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (Inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004087
Client ID: B1WDV5 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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	0.256	mg/L			2.00	0.046		08/19/08
Chloride	16887-00-6	LA-533-410	D	9.76	mg/L			2.00	0.094		08/19/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		08/19/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	15.4	mg/L			10.00	0.12		08/19/08
Sulfate	14808-79-8	LA-533-410	D	29.8	mg/L			2.00	0.26		08/19/08
ICP-200.8 MS All possible meta Prep											**08/20/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412		163	ug/L			1.00	0.0500		08/20/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-055
Sample # W08P004089
Client ID: B1WFN0 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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	BD	0.0497	mg/L			2.00	0.046		08/19/08
Chloride	16887-00-6	LA-533-410	D	7.92	mg/L			2.00	0.094		08/19/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		08/19/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	1.78	mg/L			2.00	0.024		08/19/08
Sulfate	14808-79-8	LA-533-410	D	47.4	mg/L			2.00	0.26		08/19/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but >= the IDL/MDL (inorg)
J - Analyte < lowest calibration but >= MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-055
Sample # W08P004090
Client ID: B1WFN9 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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	DU	< 0.0696	mg/L			3.00	0.070		08/19/08
Chloride	16887-00-6	LA-533-410	D	26.9	mg/L			3.00	0.14		08/19/08
Nitrogen in Nitrite	NO2-N	LA-533-410	BD	0.0702	mg/L			3.00	0.038		08/19/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	7.42	mg/L			3.00	0.036		08/19/08
Sulfate	14808-79-8	LA-533-410	D	198	mg/L			10.00	1.3		08/19/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-055
Sample # W08P004091
Client ID: B1WFM2 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Inorganic
Sampled: 08/18/08
Received: 08/18/08

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	DU	< 0.0464	mg/L			2.00	0.046		08/19/08
Chloride	16887-00-6	LA-533-410	D	18.3	mg/L			2.00	0.094		08/19/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0256	mg/L			2.00	0.026		08/19/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	7.29	mg/L			2.00	0.024		08/19/08
Sulfate	14808-79-8	LA-533-410	D	104	mg/L			2.00	0.26		08/19/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but >= the IDL/MDL (inorg)
J - Analyte < lowest calibration but >= MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 08/18/08
Receive Date:08/18/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P004083											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	1.717		RPD			3.243	20.000		08/19/08
DUP	Fluoride	16984-48-8	<4.64e-2		RPD			n/a	20.000	U	08/19/08
DUP	Nitrogen in Nitrite	NO2-N	<2.56e-2		RPD			n/a	20.000	U	08/19/08
DUP	Nitrogen in Nitrate	NO3-N	<2.42e-2		RPD			n/a	20.000	U	08/19/08
DUP	Sulfate	14808-79-8	<0.264		RPD			n/a	20.000	U	08/19/08
MS	Chloride	16887-00-6	0.9448	94.955	% Recov	80.000	120.000				08/19/08
MS	Fluoride	16984-48-8	0.45205	91.694	% Recov	80.000	120.000				08/19/08
MS	Nitrogen in Nitrite	NO2-N	0.46055	93.608	% Recov	80.000	120.000				08/19/08
MS	Nitrogen in Nitrate	NO3-N	0.45065	101.043	% Recov	80.000	120.000				08/19/08
MS	Sulfate	14808-79-8	1.9279	98.362	% Recov	80.000	120.000				08/19/08
MSD	Chloride	16887-00-6	0.9553	96.010	% Recov	80.000	120.000				08/19/08
MSD	Fluoride	16984-48-8	0.46095	93.499	% Recov	80.000	120.000				08/19/08
MSD	Nitrogen in Nitrite	NO2-N	0.46395	94.299	% Recov	80.000	120.000				08/19/08
MSD	Nitrogen in Nitrate	NO3-N	0.4519	101.323	% Recov	80.000	120.000				08/19/08
MSD	Sulfate	14808-79-8	1.9133	97.617	% Recov	80.000	120.000				08/19/08
SPK-RPD	Chloride	16887-00-6	96.010		RPD			1.105	20.000		08/19/08
SPK-RPD	Fluoride	16984-48-8	93.499		RPD			1.949	20.000		08/19/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	94.299		RPD			0.735	20.000		08/19/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	101.323		RPD			0.277	20.000		08/19/08
SPK-RPD	Sulfate	14808-79-8	97.617		RPD			0.760	20.000		08/19/08
Lab ID: W08P004089											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	7.9145		RPD			0.069	20.000		08/19/08
DUP	Fluoride	16984-48-8	6.53e-2		RPD			27.130	20.000 *		08/19/08
DUP	Nitrogen in Nitrite	NO2-N	<2.56e-2		RPD			n/a	20.000	U	08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 08/18/08
Receive Date:08/18/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
DUP	Nitrogen in Nitrate	NO3-N	1.7922		RPD			0.638	20.000		08/19/08
DUP	Sulfate	14808-79-8	47.6669		RPD			0.599	20.000		08/19/08
MS	Chloride	16887-00-6	0.95195	95.673	% Recov	80.000	120.000				08/19/08
MS	Fluoride	16984-48-8	0.4763	96.613	% Recov	80.000	120.000				08/19/08
MS	Nitrogen in Nitrite	NO2-N	0.439	89.228	% Recov	80.000	120.000				08/19/08
MS	Nitrogen in Nitrate	NO3-N	0.4425	99.215	% Recov	80.000	120.000				08/19/08
MS	Sulfate	14808-79-8	1.726	88.061	% Recov	80.000	120.000				08/19/08
MSD	Chloride	16887-00-6	0.8371	84.131	% Recov	80.000	120.000				08/19/08
MSD	Fluoride	16984-48-8	0.5178	105.030	% Recov	80.000	120.000				08/19/08
MSD	Nitrogen in Nitrite	NO2-N	0.4191	85.183	% Recov	80.000	120.000				08/19/08
MSD	Nitrogen in Nitrate	NO3-N	0.38595	86.536	% Recov	80.000	120.000				08/19/08
MSD	Sulfate	14808-79-8	1.8465	94.209	% Recov	80.000	120.000				08/19/08
SPK-RPD	Chloride	16887-00-6	84.131		RPD			12.838	20.000		08/19/08
SPK-RPD	Fluoride	16984-48-8	105.030		RPD			8.348	20.000		08/19/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	85.183		RPD			4.638	20.000		08/19/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	86.536		RPD			13.652	20.000		08/19/08
SPK-RPD	Sulfate	14808-79-8	94.209		RPD			6.746	20.000		08/19/08

BATCH QC

BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Chloride	16887-00-6	<4.69e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Fluoride	16984-48-8	<2.32e-2	n/a	mg/L	0.000	0.030			U	08/19/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	08/19/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	08/19/08
BLANK	Nitrogen in Nitrite	NO2-N	<1.28e-2	n/a	mg/L	0.000	0.020			U	08/19/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	08/19/08
BLANK	Nitrogen in Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
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 Nitrate	NO3-N	<1.21e-2	n/a	mg/L	0.000	0.040			U	08/19/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	08/19/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	08/19/08
BLANK	Sulfate	14808-79-8	<0.132	n/a	mg/L	0.000	0.200			U	08/19/08
LCS	Chloride	16887-00-6	192.968	96.004	% Recov	80.000	120.000				08/19/08
LCS	Chloride	16887-00-6	197.6159	98.316	% Recov	80.000	120.000				08/19/08
LCS	Fluoride	16984-48-8	98.4905	98.886	% Recov	80.000	120.000				08/19/08
LCS	Fluoride	16984-48-8	103.0897	103.504	% Recov	80.000	120.000				08/19/08
LCS	Nitrogen in Nitrite	NO2-N	94.8559	95.428	% Recov	80.000	120.000				08/19/08
LCS	Nitrogen in Nitrite	NO2-N	92.9357	93.497	% Recov	80.000	120.000				08/19/08
LCS	Nitrogen in Nitrate	NO3-N	91.6368	101.706	% Recov	80.000	120.000				08/19/08
LCS	Nitrogen in Nitrate	NO3-N	88.6778	98.422	% Recov	80.000	120.000				08/19/08
LCS	Sulfate	14808-79-8	387.5714	97.872	% Recov	80.000	120.000				08/19/08
LCS	Sulfate	14808-79-8	386.3561	97.565	% Recov	80.000	120.000				08/19/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 08/17/08
Receive Date:08/17/08

Lab ID: W08P004052
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	Silver	7440-22-4	956.1	95.610	% Recov	75.000	125.000				09/11/08
MS	Barium	7440-39-3	482.9	96.580	% Recov	75.000	125.000				09/11/08
MS	Beryllium	7440-41-7	514.1	102.820	% Recov	75.000	125.000				09/11/08
MS	Calcium	7440-70-2	3400	340.000	% Recov	75.000	125.000			*	09/11/08
MS	Cadmium	7440-43-9	981.4	98.140	% Recov	75.000	125.000				09/11/08
MS	Cobalt	7440-48-4	970.7	97.070	% Recov	75.000	125.000				09/11/08
MS	Chromium	7440-47-3	972.6	97.260	% Recov	75.000	125.000				09/11/08
MS	Copper	7440-50-8	927.9	92.790	% Recov	75.000	125.000				09/11/08
MS	Iron	7439-89-6	950.8	95.080	% Recov	75.000	125.000				09/11/08
MS	Potassium	7440-09-7	8190	81.900	% Recov	75.000	125.000				09/11/08
MS	Magnesium	7439-95-4	-2350	-235.000	% Recov	75.000	125.000			*	09/11/08
MS	Manganese	7439-96-5	998.4	99.840	% Recov	75.000	125.000				09/11/08
MS	Sodium	7440-23-5	-4900	-490.000	% Recov	75.000	125.000			*	09/11/08
MS	Nickel	7440-02-0	957.7	95.770	% Recov	75.000	125.000				09/11/08
MS	Antimony	7440-36-0	892	89.200	% Recov	75.000	125.000				09/11/08
MS	Strontium	7440-24-6	588.4	117.680	% Recov	75.000	125.000				09/11/08
MS	Vanadium	7440-62-2	958.2	95.820	% Recov	75.000	125.000				09/11/08
MS	Zinc	7440-66-6	980.2	98.020	% Recov	75.000	125.000				09/11/08
MSD	Silver	7440-22-4	981	98.100	% Recov	75.000	125.000				09/11/08
MSD	Barium	7440-39-3	496	99.200	% Recov	75.000	125.000				09/11/08
MSD	Beryllium	7440-41-7	529.4	105.880	% Recov	75.000	125.000				09/11/08
MSD	Calcium	7440-70-2	3900	390.000	% Recov	75.000	125.000			*	09/11/08
MSD	Cadmium	7440-43-9	1014	101.400	% Recov	75.000	125.000				09/11/08
MSD	Cobalt	7440-48-4	995.8	99.580	% Recov	75.000	125.000				09/11/08
MSD	Chromium	7440-47-3	997.6	99.760	% Recov	75.000	125.000				09/11/08
MSD	Copper	7440-50-8	952.1	95.210	% Recov	75.000	125.000				09/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 08/17/08
Receive Date:08/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Iron	7439-89-6	988.9	98.890	% Recov	75.000	125.000				09/11/08
MSD	Potassium	7440-09-7	8550	85.500	% Recov	75.000	125.000				09/11/08
MSD	Magnesium	7439-95-4	-2130	-213.000	% Recov	75.000	125.000			•	09/11/08
MSD	Manganese	7439-96-5	1031.4	103.140	% Recov	75.000	125.000				09/11/08
MSD	Sodium	7440-23-5	-500	-50.000	% Recov	75.000	125.000			•	09/11/08
MSD	Nickel	7440-02-0	980.4	98.040	% Recov	75.000	125.000				09/11/08
MSD	Antimony	7440-36-0	922.8	92.280	% Recov	75.000	125.000				09/11/08
MSD	Strontium	7440-24-6	599.4	119.880	% Recov	75.000	125.000				09/11/08
MSD	Vanadium	7440-62-2	993.1	99.310	% Recov	75.000	125.000				09/11/08
MSD	Zinc	7440-66-6	999.8	99.980	% Recov	75.000	125.000				09/11/08
SPK-RPD	Silver	7440-22-4	98.100		RPD			2.571	20.000		09/11/08
SPK-RPD	Barium	7440-39-3	99.200		RPD			2.676	20.000		09/11/08
SPK-RPD	Beryllium	7440-41-7	105.880		RPD			2.932	20.000		09/11/08
SPK-RPD	Calcium	7440-70-2	390.000		RPD			13.699	20.000		09/11/08
SPK-RPD	Cadmium	7440-43-9	101.400		RPD			3.268	20.000		09/11/08
SPK-RPD	Cobalt	7440-48-4	99.580		RPD			2.553	20.000		09/11/08
SPK-RPD	Chromium	7440-47-3	99.760		RPD			2.538	20.000		09/11/08
SPK-RPD	Copper	7440-50-8	95.210		RPD			2.574	20.000		09/11/08
SPK-RPD	Iron	7439-89-6	98.890		RPD			3.928	20.000		09/11/08
SPK-RPD	Potassium	7440-09-7	85.500		RPD			4.301	20.000		09/11/08
SPK-RPD	Magnesium	7439-95-4	-213.000		RPD			-9.821	20.000 •		09/11/08
SPK-RPD	Manganese	7439-96-5	103.140		RPD			3.252	20.000		09/11/08
SPK-RPD	Sodium	7440-23-5	-50.000		RPD			-162.963	20.000 •		09/11/08
SPK-RPD	Nickel	7440-02-0	98.040		RPD			2.343	20.000		09/11/08
SPK-RPD	Antimony	7440-36-0	92.280		RPD			3.394	20.000		09/11/08
SPK-RPD	Strontium	7440-24-6	119.880		RPD			1.852	20.000		09/11/08
SPK-RPD	Vanadium	7440-62-2	99.310		RPD			3.577	20.000		09/11/08
SPK-RPD	Zinc	7440-66-6	99.980		RPD			1.980	20.000		09/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BATCH QC											
BLANK	Silver	7440-22-4	<5	n/a	ug/L					U	09/11/08
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	09/11/08
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	09/11/08
BLANK	Calcium	7440-70-2	<73	n/a	ug/L					U	09/11/08
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	09/11/08
BLANK	Cobalt	7440-48-4	<4	n/a	ug/L					U	09/11/08
BLANK	Chromium	7440-47-3	<13	n/a	ug/L					U	09/11/08
BLANK	Copper	7440-50-8	<6	n/a	ug/L					U	09/11/08
BLANK	Iron	7439-89-6	<25	n/a	ug/L					U	09/11/08
BLANK	Potassium	7440-09-7	<170	n/a	ug/L					U	09/11/08
BLANK	Magnesium	7439-95-4	<50	n/a	ug/L					U	09/11/08
BLANK	Manganese	7439-96-5	<4	n/a	ug/L					U	09/11/08
BLANK	Sodium	7440-23-5	<51	n/a	ug/L					U	09/11/08
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	09/11/08
BLANK	Antimony	7440-36-0	<56	n/a	ug/L					U	09/11/08
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	09/11/08
BLANK	Vanadium	7440-62-2	<12	n/a	ug/L					U	09/11/08
BLANK	Zinc	7440-66-6	<9	n/a	ug/L					U	09/11/08
LCS	Silver	7440-22-4	953.7	95.370	% Recov	80.000	120.000				09/11/08
LCS	Barium	7440-39-3	471.6	94.320	% Recov	80.000	120.000				09/11/08
LCS	Beryllium	7440-41-7	528.4	105.680	% Recov	80.000	120.000				09/11/08
LCS	Calcium	7440-70-2	1017	101.700	% Recov	80.000	120.000				09/11/08
LCS	Cadmium	7440-43-9	1014	101.400	% Recov	80.000	120.000				09/11/08
LCS	Cobalt	7440-48-4	1025	102.500	% Recov	80.000	120.000				09/11/08
LCS	Chromium	7440-47-3	1001	100.100	% Recov	80.000	120.000				09/11/08
LCS	Copper	7440-50-8	937.7	93.770	% Recov	80.000	120.000				09/11/08
LCS	Iron	7439-89-6	992.8	99.280	% Recov	80.000	120.000				09/11/08
LCS	Potassium	7440-09-7	10150	101.500	% Recov	80.000	120.000				09/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081773
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Magnesium	7439-95-4	895.6	89.560	% Recov	80.000	120.000				09/11/08
LCS	Manganese	7439-96-5	1016	101.600	% Recov	80.000	120.000				09/11/08
LCS	Sodium	7440-23-5	914.6	91.460	% Recov	80.000	120.000				09/11/08
LCS	Nickel	7440-02-0	1025	102.500	% Recov	80.000	120.000				09/11/08
LCS	Antimony	7440-36-0	933.5	93.350	% Recov	80.000	120.000				09/11/08
LCS	Strontium	7440-24-6	505.6	101.120	% Recov	80.000	120.000				09/11/08
LCS	Vanadium	7440-62-2	975.8	97.580	% Recov	80.000	120.000				09/11/08
LCS	Zinc	7440-66-6	994.3	99.430	% Recov	80.000	120.000				09/11/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081773
Matrix: WATER
Test: ICP-200.8 MS All possible meta

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

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P003904											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Uranium	7440-61-1	35.925	89.812	% Recov	70.000	130.000				08/20/08
MSD	Uranium	7440-61-1	35.455	88.637	% Recov	70.000	130.000				08/20/08
SPK-RPD	Uranium	7440-61-1	88.637		RPD			1.317	20.000		08/20/08
Lab ID: W08P003906											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Uranium	7440-61-1	35.5054	88.764	% Recov	70.000	130.000				08/20/08
MSD	Uranium	7440-61-1	35.5454	88.864	% Recov	70.000	130.000				08/20/08
SPK-RPD	Uranium	7440-61-1	88.864		RPD			0.113	20.000		08/20/08
Lab ID: W08P004107											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Uranium	7440-61-1	34.82	87.050	% Recov	70.000	130.000				08/20/08
MSD	Uranium	7440-61-1	34.09	85.225	% Recov	70.000	130.000				08/20/08
SPK-RPD	Uranium	7440-61-1	85.225		RPD			2.119	20.000		08/20/08
BATCH QC											
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	08/20/08
LCS	Uranium	7440-61-1	34.4	86.000	% Recov	85.000	115.000				08/20/08

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent E6-35

Group #: WSCF20081773
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		IC Anion - Sample dup RPD out of limits for fluoride in sample W08P004089; Analyte concentration below calibration range. DTS ICP-AES: [Samples W08P4085-4086] No zirconium present in the LCS standard. Magnesium, calcium, and sodium 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.

Lab Areas: VALGROUP - Group Validation; VALTEST - Test Validation; TESTDATA - Test Data Entry; LOGSAMP - Login for Sample; LOGTEST - Login for Tests

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004086
Client ID: B1WDT9 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Organic
Sampled: 08/18/08
Received: 08/18/08

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		08/27/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Carbon tetrachloride	56-23-5	LA-523-455		67.0	ug/L			1.00	1.0		08/27/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Chloroform	67-66-3	LA-523-455	J	1.30	ug/L			1.00	1.0		08/27/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Methylenechloride	75-09-2	LA-523-455	BJ	1.60	ug/L			1.00	1.0		08/27/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		08/27/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		08/27/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004086
Client ID: B1WDT9 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Organic
Sampled: 08/18/08
Received: 08/18/08

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		08/27/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-008
Sample # W08P004088
Client ID: B1WMT4 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Organic
Sampled: 08/18/08
Received: 08/18/08

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		08/27/08
Trichloroethene	79-01-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Benzene	71-43-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Toluene	108-88-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Chlorobenzene	108-90-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,1-Dichloroethane	75-34-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Ethylbenzene	100-41-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,2-Dichloroethane	107-06-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
4-Methyl-2-Pentanone	108-10-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Tetrachloroethene	127-18-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Xylenes (total)	1330-20-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Carbon tetrachloride	56-23-5	LA-523-455	J	2.20	ug/L			1.00	1.0		08/27/08
Acetone	67-64-1	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Chloroform	67-66-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Vinyl chloride	75-01-4	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
Methylenechloride	75-09-2	LA-523-455	BJ	2.90	ug/L			1.00	1.0		08/27/08
Carbon disulfide	75-15-0	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
2-Butanone	78-93-3	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
1-Butanol	71-36-3	LA-523-455	U	< 100	ug/L			1.00	1.0e+02		08/27/08
Tetrahydrofuran	109-99-9	LA-523-455	U	< 2.00	ug/L			1.00	2.0		08/27/08
trans-1,2-Dichloroethylene	156-60-5	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08
cis-1,2-Dichloroethylene	156-59-2	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
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* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-008
Sample # W08P004088
Client ID: B1WMT4 PNNL-GPP WSCF
Matrix: WATER

Group #: WSCF20081773
Department: Organic
Sampled: 08/18/08
Received: 08/18/08

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		08/27/08
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	< 1.00	ug/L			1.00	1.0		08/27/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081773
Matrix: WATER
Test: VOA Ground Water Protection

Sample Date: 08/17/08
Receive Date:08/17/08

Lab ID: W08P004043
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	1,1-Dichloroethene	75-35-4	23.070	92.300	% Recov	63.000	117.000				08/27/08
MS	Benzene	71-43-2	22.360	89.400	% Recov	75.000	129.000				08/27/08
MS	4-Bromofluorobenzene(Surr)	460-00-4	48.400	96.800	% Recov	75.000	125.000				08/27/08
MS	Chlorobenzene	108-90-7	24.920	99.700	% Recov	79.000	119.000				08/27/08
MS	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.380	111.000	% Recov	75.000	125.000				08/27/08
MS	Toluene-d8(Surr)	2037-26-5	49.620	99.200	% Recov	75.000	125.000				08/27/08
MS	Toluene	108-88-3	23.670	94.700	% Recov	76.000	120.000				08/27/08
MS	Trichloroethene	79-01-6	22.440	89.800	% Recov	73.000	123.000				08/27/08
MSD	1,1-Dichloroethene	75-35-4	21.830	87.300	% Recov	63.000	117.000				08/27/08
MSD	Benzene	71-43-2	22.880	91.500	% Recov	75.000	129.000				08/27/08
MSD	4-Bromofluorobenzene(Surr)	460-00-4	48.460	96.900	% Recov	75.000	125.000				08/27/08
MSD	Chlorobenzene	108-90-7	25.740	103.000	% Recov	79.000	119.000				08/27/08
MSD	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.280	111.000	% Recov	75.000	125.000				08/27/08
MSD	Toluene-d8(Surr)	2037-26-5	49.740	99.500	% Recov	75.000	125.000				08/27/08
MSD	Toluene	108-88-3	24.280	97.100	% Recov	76.000	120.000				08/27/08
MSD	Trichloroethene	79-01-6	22.930	91.700	% Recov	73.000	123.000				08/27/08
SPK-RPD	1,1-Dichloroethene	75-35-4	87.300		RPD			5.568	20.000		08/27/08
SPK-RPD	Benzene	71-43-2	91.500		RPD			2.322	20.000		08/27/08
SPK-RPD	4-Bromofluorobenzene(Surr)	460-00-4	96.900		RPD			0.103	20.000		08/27/08
SPK-RPD	Chlorobenzene	108-90-7	103.000		RPD			3.256	20.000		08/27/08
SPK-RPD	1,2-Dichloroethane-d4(Surr)	17060-07-0	111.000		RPD			0.000	20.000		08/27/08
SPK-RPD	Toluene-d8(Surr)	2037-26-5	99.500		RPD			0.302	20.000		08/27/08
SPK-RPD	Toluene	108-88-3	97.100		RPD			2.503	20.000		08/27/08
SPK-RPD	Trichloroethene	79-01-6	91.700		RPD			2.094	20.000		08/27/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081773
Matrix: WATER
Test: VOA Ground Water Protection

Sample Date: 08/18/08
Receive Date:08/18/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P004086											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	4-Bromofluorobenzene(Surr)	460-00-4	48.240	96.500	% Recov	75.000	125.000				08/27/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.100	110.000	% Recov	75.000	125.000				08/27/08
SURR	Toluene-d8(Surr)	2037-26-5	50.900	102.000	% Recov	75.000	125.000				08/27/08
Lab ID: W08P004088											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	4-Bromofluorobenzene(Surr)	460-00-4	47.890	95.800	% Recov	75.000	125.000				08/27/08
SURR	1,2-Dichloroethane-d4(Surr)	17060-07-0	55.040	110.000	% Recov	75.000	125.000				08/27/08
SURR	Toluene-d8(Surr)	2037-26-5	50.820	102.000	% Recov	75.000	125.000				08/27/08
BATCH QC											
BLANK	1,1-Dichloroethane	75-34-3	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1,1,1-Trichloroethane	71-55-6	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1,1,2-Trichloroethane	79-00-5	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1,1-Dichloroethene	75-35-4	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1,2-Dichloroethane	107-06-2	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1,4-Dichlorobenzene	106-46-7	< 1.0	n/a	ug/L					U	08/27/08
BLANK	1-Butanol	71-36-3	< 100	n/a	ug/L					U	08/27/08
BLANK	4-Methyl-2-Pentanone	108-10-1	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Acetone	67-64-1	57	57.000	ug/L						08/27/08
BLANK	Benzene	71-43-2	< 1.0	n/a	ug/L					U	08/27/08
BLANK	4-Bromofluorobenzene(Surr)	460-00-4	48.550	97.100	% Recov	75.000	125.000				08/27/08
BLANK	Carbon disulfide	75-15-0	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Carbon tetrachloride	56-23-5	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Chloroform	67-66-3	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Chlorobenzene	108-90-7	< 1.0	n/a	ug/L					U	08/27/08
BLANK	cis-1,2-Dichloroethylene	156-59-2	< 1.0	n/a	ug/L					U	08/27/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20081773
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	54.390	109.000	% Recov	75.000	125.000				08/27/08
BLANK	trans-1,2-Dichloroethylene	156-60-5	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Ethylbenzene	100-41-4	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Ethyl cyanide	107-12-0	< 2.0	n/a	ug/L					U	08/27/08
BLANK	2-Butanone	78-93-3	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Methylenechloride	75-09-2	2.0	2.000	ug/L						08/27/08
BLANK	Tetrachloroethene	127-18-4	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Xylenes (total)	1330-20-7	< 1.0	n/a	ug/L	0.000	5.000			U	08/27/08
BLANK	Tetrahydrofuran	109-99-9	< 2.0	n/a	ug/L					U	08/27/08
BLANK	Toluene-d8(Surr)	2037-26-5	50.040	100.000	% Recov	75.000	125.000				08/27/08
BLANK	Toluene	108-88-3	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Trichloroethene	79-01-6	< 1.0	n/a	ug/L					U	08/27/08
BLANK	Vinyl chloride	75-01-4	< 1.0	n/a	ug/L					U	08/27/08
LCS	1,1-Dichloroethene	75-35-4	20.770	83.100	% Recov	75.000	125.000				08/27/08
LCS	Benzene	71-43-2	21.930	87.700	% Recov	75.000	125.000				08/27/08
LCS	4-Bromofluorobenzene(Surr)	460-00-4	48.200	96.400	% Recov	75.000	125.000				08/27/08
LCS	Chlorobenzene	108-90-7	24.020	96.100	% Recov	75.000	125.000				08/27/08
LCS	1,2-Dichloroethane-d4(Surr)	17060-07-0	54.910	110.000	% Recov	75.000	125.000				08/27/08
LCS	Toluene-d8(Surr)	2037-26-5	50.410	101.000	% Recov	75.000	125.000				08/27/08
LCS	Toluene	108-88-3	23.290	93.200	% Recov	75.000	125.000				08/27/08
LCS	Trichloroethene	79-01-6	21.420	85.700	% Recov	75.000	125.000				08/27/08

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004086
Client ID: B1WDT9 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Radiochemistry
Sampled: 08/18/08
Received: 08/18/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421		140	pCi/L	+-28.0	pCi/L	1.00	5.7		08/27/08
Tritium by Liq Sct column prep											
Tritium	10028-17-8	LA-508-421		560	pCi/L	+-185	pCi/L	1.00	2.2e+02		09/05/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but >= the IDL/MDL (inorg)
J - Analyte < lowest calibration but >= MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-053
Sample # W08P004087
Client ID: B1WDV5 PNNL-GPP WSCF

Matrix: WATER

Group #: WSCF20081773
Department: Radiochemistry
Sampled: 08/18/08
Received: 08/18/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421		240	pCi/L	+-48.0	pCi/L	1.00	5.7		08/27/08
Tritium by Liq Sct column prep											
Tritium	10028-17-8	LA-508-421		240	pCi/L	+-146	pCi/L	1.00	2.2e+02		09/05/08

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

B - The Analyte detected in both the BLANK and the SAMPLE.(org)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

B - The analyte < the RDL but > = the IDL/MDL (inorg)
J - Analyte < lowest calibration but > = MDL.(org)
U - Analyzed for but not detected above limiting criteria.(org)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20081773
Matrix: WATER
Test: TC99 by Liquid Scin.

Sample Date: 08/17/08
Receive Date:08/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P004061											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tc-99 by Liquid Scin.	14133-76-7	9.9E+01		RPD			10.526	20.000		08/27/08
MS	Tc-99 by Liquid Scin.	14133-76-7	656.4	103.110	% Recov	75.000	125.000				08/27/08
BATCH QC											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U-2.7	n/a	pCi/L	-10.000	10.000				08/27/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	161.6	101.508	% Recov	80.000	120.000				08/27/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Radiochemistry**

SDG Number: WSCF20081773
Matrix: WATER
Test: Tritium by Liq Sct column prep

Sample Date: 08/17/08
Receive Date:08/17/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P004055											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tritium	10028-17-8	U1.2E+02		RPD			n/a	20.000		09/05/08
MS	Tritium	10028-17-8	22240.5	86.849	% Recov	75.000	125.000				09/05/08
BATCH QC											
BLANK	Tritium	10028-17-8	U1.0E+02	n/a	pCi/L	-10.000	1000.000				09/05/08
LCS	Tritium	10028-17-8	3160.	93.095	% Recov	80.000	120.000				09/05/08

M4W41-SLF-08-1019

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
09/17/08

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP
PO#: 122543
Group#: 20081773

The following samples were received from you on 08/18/08. 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
W08P004085	B1WDT8	PNNL-GPP @GPP6010	Water	08/18/08
W08P004086	B1WDT9	PNNL-GPP @2008 @GPP6010 @H3-33 @IC-30 @TC99-30 @VOA-GPP	Water	08/18/08
W08P004087	B1WDV5	PNNL-GPP @2008 @H3-33 @IC-30 @TC99-30	Water	08/18/08
W08P004088	B1WMT4	PNNL-GPP @VOA-GPP	Water	08/18/08
W08P004089	B1WFN0	PNNL-GPP @IC-30	Water	08/18/08
W08P004090	B1WFN9	PNNL-GPP @IC-30	Water	08/18/08
W08P004091	B1WFM2	PNNL-GPP @IC-30	Water	08/18/08

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
@TC99-30	TC99 by Liquid Scin.
@VOA-GPP	VOA Ground Water Protection

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

09/17/08 20081773

I08-053-86

Collector D Connolly	**Contact/Requester** Steve Trent	**Telephone No.** 509-373-5869 **MSIN** **FAX**
SAF No. I08-053	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title 2UP1, AUGUST 2008	HNF-N-506-14	**Ice Chest No.** GWS-015 **Temp.**
Shipped To (Lab) Waste Sampling & Characterization	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 30 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
200 Area Generator Knowledge Information Form applies.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WDT8 (F)	W8P04085	W	8-18-8	1122	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	HNO3 to pH <2
B1WDT9	4086	W	↓	↓	4x40-mL aGs*	8260_VOA_GCMS: List-2 (25)	HCl or H2SO4 to pH <2 Cool~4C
B1WDT9	↓	W	↓	↓	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	HNO3 to pH <2
B1WDT9	↓	W	↓	↓	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C
B1WDT9	↓	W	↓	↓	1x1000-mL G/P	TC99_3MDSK_LSC: Tc-99 (1)	HCl to pH <2
B1WDT9	↓	W	↓	↓	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None
B1WDT9	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			AUG 18 2008 1330				AUG 18 2008 1330
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-053-94

Collector D Connolly	**Contact/Requester** Steve Trent	**Telephone No.** 509-373-5869 **MSIN** **FAX**
SAF No. I08-053	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title 2UP1, AUGUST 2008	HNF-N-506-14	**Ice Chest No.** GWS-015 **Temp.**
Shipped To (Lab) Waste Sampling & Characterization	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 30 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
200 Area Generator Knowledge Information Form applies.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WDV5	40587	W	8-18-8	1301	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C
B1WDV5	↓	W	↓	↓	1x1000-mL G/P	TC99_3MDSK_LSC: Tc-99 (1)	HCl to pH <2
B1WDV5	↓	W	↓	↓	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None
B1WDV5	↓	W	↓	↓	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Connolly			AUG 18 2008 1300				AUG 18 2008 1300
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	= Drum Solid
SF	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wine
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

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FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

S08-008-77

Page 1 of 1

Collector D Camilly	**Contact/Requester** Steve Trent	**Telephone No.** 509-373-5869 **MSIN** **FAX**
SAF No. S08-008	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title SURV. AUGUST 2008		**Ice Chest No.** GWS-015 **Temp.**
Shipped To (Lab) Waste Sampling & Characterization	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol SURV	**Priority:** 30 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
Site-Wide Generator Knowledge Information Form applies.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WMT4	4088	W	8-18-8	1122	1x20-mL P	Activity Scan	None
B1WMT4	↓	W	↓	↓	4x40-mL aGs*	8260_VOA_GCMS: List-2 (25)	HCl or H2SO4 to pH <2 Cool~4C

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D Camilly			AUG 18 2008 1330				AUG 18 2008 1330
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

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FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

108-055-60

Page 1 of 1

Collector Roy Shepard Fluor Hanford	Contact/Requester Steve Trent	Telephone No. 509-373-5869 MSIN FAX
SAF No. 108-055	Sampling Origin Hanford Site	Purchase Order/Charge Code
Project Title ISRM AUGUST 2008	UNE-N-506.17	Ice Chest No. CWS-008 Temp.
Shipped To (Lab) Waste Sampling & Characterization	Method of Shipment Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol CERCLA	Priority: 30 Days **PRIORITY**	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
100 Area Generator Knowledge Information Form applies.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WFN0	4089	W	8/18/08	1107	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

ICED

Relinquished By Roy Shepard Fluor Hanford Print Sign	Date/Time 1355 AUG 18 2008	Received By Print Sign TAFUZZIM	Date/Time 1355 AUG 18 2008
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

48 01 50

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-055-76

Page 1 of 1

Collector: Roy Shepard, Fluor Hanford	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: 108-055	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: ISRM, AUGUST 2008	HNF-N-526-17	Ice Chest No.: AW3-009 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 30 Days **PRIORITY**	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS Hold Time
100 Area Generator Knowledge Information Form applies.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WFN9	4090	W	8/18/08	1251	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

ICED

Relinquished By	Received By
Print: Roy Shepard, Fluor Hanford; Sign: [signature]; Date/Time: 1355 AUG 18 2008	Print: TA Pnazim; Sign: [signature]; Date/Time: 1355 AUG 18 2008
Relinquished By: Date/Time	Received By: Date/Time
Relinquished By: Date/Time	Received By: Date/Time
Relinquished By: Date/Time	Received By: Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-055-44

Collector Roy Shepard Fluor Hanford	**Contact/Requester** Steve Trent	**Telephone No.** 509-373-5869 **MSIN** **FAX**
SAF No. 108-055	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title ISRM, AUGUST 2008	HNF-N-506 M	**Ice Chest No.** **Temp.**
Shipped To (Lab) Waste Sampling & Characterization	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol CERCLA	**Priority:** 30 Days **PRIORITY**	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
100 Area Generator Knowledge Information Form applies.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1WFM2	4091	W	8/18/08	1204	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Roy Shepard Fluor Hanford			1355 AUG 18 2008	TA Frazier			1355 AUG 18 2008
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liquid
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wine
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time