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RECEIVED JULY 7, 2008

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FLUOR

Memorandum

M4W41-SLF-08-667

To: H. Hampt E6-35 Date: July 3, 2008

From: S. L. Fitzgerald, Manager
WSCF Analytical Lab
J K Douglas for SLF

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 WSCF20081006

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 WSCF20081006:

- 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#: WSCF20081006
Data Deliverable Date: 30-jun-2008
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I08-035	B1V5C1	W08P002404	WATER
	B1V5C2	W08P002406	WATER
	B1V5C6	W08P002407	WATER
	B1V5C7	W08P002408	WATER
I08-037	B1V678	W08P002422	WATER
I08-039	B1V6R1	W08P002421	WATER
	B1V6R4	W08P002409	WATER
	B1V6R5	W08P002411	WATER
	B1V6T0	W08P002412	WATER
	B1V6X2	W08P002413	WATER
S08-004	B1TWK6	W08P002402	WATER
	B1TWK7	W08P002403	WATER

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ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Introduction

Twelve (12) groundwater samples were received at the WSCF Laboratory on May 16, 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 14, 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 28 through 31 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 B1V876 and B1V835 (SDG# 20081015); B1V2J8 (SDG# 20081002); and, B1V678 of this SDG.
- Chloride (B1V678) – Matrix Spike was less than established limits and affected sample results were N flagged.

All other QC controls are within the established limits.

Cyanide – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See page 32 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V8M7 (SDG# 20080966).

- Matrix Spike and Matrix Spike Duplicate exceeded established laboratory limits due to high sample concentration. Sample results exceeded spiking levels by 20X. Spike recoveries are not valid. Sample result was not flagged.

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 33 through 36 for QC details. Analytical Note(s):

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1V861 (SDG# 20080985).

- Sample results were D flagged if dilution(s) were required.

- Manganese contamination detected in the Blank was evaluated and sample results were not affected.

- Calcium, Magnesium and Sodium sample results exceeded spiking levels by a factor of 4. Spike recoveries are not valid. High and check standards were analyzed to ensure linearity because sample results were greater than the calibration standard.

- Iron spike recoveries were less than established laboratory limits. Affected sample results were N flagged.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See page 37 for QC details. Analytical Note(s):

- Matrix Spikes and Matrix Spike Duplicates were analyzed on samples B1V2J8 (SDG# 20081002) and B1V283 (SDG# 20081049). Due to technical difficulties, Batch QC was not recorded in LABCORE and is therefore offered below. Sample results were X flagged.

- <u>B1V2J8 Batch QC</u>

    - Matrix Spike recovery = 101.8%

    - Matrix Spike Duplicate recovery = 98.3%

    - Relative Percent Difference (RPD) = 3.5%

- B1V283 Batch QC
    - Matrix Spike recovery = 97.8%
    - Matrix Spike Duplicate recovery = 95.0%
    - Relative Percent Difference (RPD) = 2.8%

All QC controls are within the established limits.

Total Alkalinity – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group per GRP Letter of Instruction. See page 38 for QC details.

All QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike, 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# B1V2K5 (SDG# 20081004).
- Tritium – Duplicate and Matrix Spike were analyzed on sample# B1T5F5 (SDG# 20080991).

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.

J Douglas 7/3/08 for SLF
Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Pauline D. Mix
Pauline D. Mix
WSCF Client Services

M4W41-SLF-08-667

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 7/3/08

Client Services: P.D. Mix 7/3/2008

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#: WSCF20081006
Report Date: 1-jul-2008
Report WGPP/ver. 5.2
GPAP

w13qlog v4.2 01-jul-2008 10:11:11

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20081006

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
36391	2	36801	41134	BLANK		Anions by Ion Chromatography
36391	14	36801	41134	BLANK		Anions by Ion Chromatography
36391	24	36801	41134	BLANK		Anions by Ion Chromatography
36391	3	36801	41134	LCS		Anions by Ion Chromatography
36391	15	36801	41134	LCS		Anions by Ion Chromatography
36391	22	36801	41134	SAMPLE	W08P002406	Anions by Ion Chromatography
36391	23	36801	41134	SAMPLE	W08P002408	Anions by Ion Chromatography
36391	5	36801	41134	DUP	W08P002461	Anions by Ion Chromatography
36391	6	36801	41134	MS	W08P002461	Anions by Ion Chromatography
36391	7	36801	41134	MSD	W08P002461	Anions by Ion Chromatography
36391	7	36801	41134	SPK-RPD	W08P002461	Anions by Ion Chromatography
36391	17	36801	41134	DUP	W08P002464	Anions by Ion Chromatography
36391	18	36801	41134	MS	W08P002464	Anions by Ion Chromatography
36391	19	36801	41134	MSD	W08P002464	Anions by Ion Chromatography
36391	19	36801	41134	SPK-RPD	W08P002464	Anions by Ion Chromatography
36389	2	36805	41140	BLANK		Anions by Ion Chromatography
36389	13	36805	41140	BLANK		Anions by Ion Chromatography
36389	23	36805	41140	BLANK		Anions by Ion Chromatography
36389	3	36805	41140	LCS		Anions by Ion Chromatography
36389	14	36805	41140	LCS		Anions by Ion Chromatography
36389	5	36805	41140	DUP	W08P002398	Anions by Ion Chromatography
36389	6	36805	41140	MS	W08P002398	Anions by Ion Chromatography
36389	7	36805	41140	MSD	W08P002398	Anions by Ion Chromatography
36389	7	36805	41140	SPK-RPD	W08P002398	Anions by Ion Chromatography
36389	8	36805	41140	SAMPLE	W08P002403	Anions by Ion Chromatography
36389	21	36805	41140	SAMPLE	W08P002404	Anions by Ion Chromatography
36389	22	36805	41140	SAMPLE	W08P002407	Anions by Ion Chromatography
36389	9	36805	41140	SAMPLE	W08P002409	Anions by Ion Chromatography
36389	10	36805	41140	SAMPLE	W08P002411	Anions by Ion Chromatography
36389	11	36805	41140	SAMPLE	W08P002412	Anions by Ion Chromatography
36389	19	36805	41140	SAMPLE	W08P002413	Anions by Ion Chromatography
36389	12	36805	41140	SAMPLE	W08P002421	Anions by Ion Chromatography
36389	16	36805	41140	DUP	W08P002422	Anions by Ion Chromatography
36389	17	36805	41140	MS	W08P002422	Anions by Ion Chromatography
36389	18	36805	41140	MSD	W08P002422	Anions by Ion Chromatography
36389	15	36805	41140	SAMPLE	W08P002422	Anions by Ion Chromatography
36389	18	36805	41140	SPK-RPD	W08P002422	Anions by Ion Chromatography
36477	1	36891	41238	LCS		Total Alkalinity as mg/L CaCO3
36477	13	36891	41238	LCS		Total Alkalinity as mg/L CaCO3
36477	23	36891	41238	LCS		Total Alkalinity as mg/L CaCO3
36477	3	36891	41238	DUP	W08P002403	Total Alkalinity as mg/L CaCO3
36477	2	36891	41238	SAMPLE	W08P002403	Total Alkalinity as mg/L CaCO3
36521	1	36935	41303	BLANK		Cyanide by Midi/Spectrophotom
36521	2	36935	41303	LCS		Cyanide by Midi/Spectrophotom
36521	5	36935	41303	MS	W08P002298	Cyanide by Midi/Spectrophotom
36521	6	36935	41303	MSD	W08P002298	Cyanide by Midi/Spectrophotom
36521	6	36935	41303	SPK-RPD	W08P002298	Cyanide by Midi/Spectrophotom
36521	12	36935	41303	SAMPLE	W08P002403	Cyanide by Midi/Spectrophotom

36648	1	37064	41389	BLANK		ICP-200.8 MS All possible meta
36648	2	37064	41389	LCS		ICP-200.8 MS All possible meta
36648	10	37064	41389	SAMPLE	W08P002403	ICP-200.8 MS All possible meta
36648	11	37064	41389	SAMPLE	W08P002422	ICP-200.8 MS All possible meta
36792	1	37211	41632	BLANK		ICP Metals Analysis, Grd H20 P
36792	2	37211	41632	LCS		ICP Metals Analysis, Grd H20 P
36792	4	37211	41632	MS	W08P002346	ICP Metals Analysis, Grd H20 P
36792	5	37211	41632	MSD	W08P002346	ICP Metals Analysis, Grd H20 P
36792	5	37211	41632	SPK-RPD	W08P002346	ICP Metals Analysis, Grd H20 P
36792	13	37211	41632	SAMPLE	W08P002402	ICP Metals Analysis, Grd H20 P
36792	14	37211	41632	SAMPLE	W08P002403	ICP Metals Analysis, Grd H20 P

w13qlog v4.2 01-jul-2008 10:11:11

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20081006

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
36452	1	36866	41209	BLANK		Tritium by Liq Sct column prep
36452	2	36866	41209	LCS		Tritium by Liq Sct column prep
36452	4	36866	41209	DUP	W08P002375	Tritium by Liq Sct column prep
36452	3	36866	41209	MS	W08P002375	Tritium by Liq Sct column prep
36452	6	36866	41209	SAMPLE	W08P002403	Tritium by Liq Sct column prep
36452	7	36866	41209	SAMPLE	W08P002422	Tritium by Liq Sct column prep
36447	1	36862	41265	BLANK		TC99 by Liquid Scin.
36447	4	36862	41265	LCS		TC99 by Liquid Scin.
36447	3	36862	41265	DUP	W08P002401	TC99 by Liquid Scin.
36447	2	36862	41265	MS	W08P002401	TC99 by Liquid Scin.
36447	6	36862	41265	SAMPLE	W08P002403	TC99 by Liquid Scin.

WSCF
METHOD REFERENCES REPORT

Department: Inorganic

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

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

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

WSCF
METHOD REFERENCES REPORT

Department: Radiochemistry

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

LA-508-421 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: S08-004
Sample # W08P002402
Client ID: B1TWK6 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H20 P Prep											**06/20/08**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	N	67.5	ug/L			1.00	9.0		06/23/08
Magnesium	7439-95-4	LA-505-411		2.56e+04	ug/L			1.00	6.0		06/23/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Potassium	7440-09-7	LA-505-411		9.64e+03	ug/L			1.00	45		06/23/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		06/23/08
Sodium	7440-23-5	LA-505-411		3.16e+04	ug/L			1.00	27		06/23/08
Antimony	7440-36-0	LA-505-411	U	< 32.0	ug/L			1.00	32		06/23/08
Barium	7440-39-3	LA-505-411		39.1	ug/L			1.00	4.0		06/23/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Chromium	7440-47-3	LA-505-411		4.30	ug/L			1.00	4.0		06/23/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Copper	7440-50-8	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Vanadium	7440-62-2	LA-505-411		20.3	ug/L			1.00	7.0		06/23/08
Zinc	7440-66-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Calcium	7440-70-2	LA-505-411		8.66e+04	ug/L			1.00	34		06/23/08
Strontium	7440-24-6	LA-505-411		447	ug/L			1.00	4.0		06/23/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-004
Sample # W08P002403
Client ID: B1TWK7 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	< 0.105	mg/L			5.00	0.10		05/16/08
Chloride	16887-00-6	LA-533-410	D	22.5	mg/L			5.00	0.55		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0495	mg/L			5.00	0.050		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	32.5	mg/L			10.00	0.36		05/16/08
Sulfate	14808-79-8	LA-533-410	D	170	mg/L			5.00	0.38		05/16/08
Cyanide											
Cyanide	57-12-5	LA-695-402		162	ug/L			1.00	4.0		05/28/08
ICP Metals Analysis, Grd H20 P Prep											**06/20/08**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	N	197	ug/L			1.00	9.0		06/23/08
Magnesium	7439-95-4	LA-505-411		2.55e+04	ug/L			1.00	6.0		06/23/08
Manganese	7439-96-5	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Nickel	7440-02-0	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Potassium	7440-09-7	LA-505-411		9.65e+03	ug/L			1.00	45		06/23/08
Silver	7440-22-4	LA-505-411	U	< 5.00	ug/L			1.00	5.0		06/23/08
Sodium	7440-23-5	LA-505-411		3.12e+04	ug/L			1.00	27		06/23/08
Antimony	7440-36-0	LA-505-411	U	< 32.0	ug/L			1.00	32		06/23/08
Barium	7440-39-3	LA-505-411		39.7	ug/L			1.00	4.0		06/23/08
Cadmium	7440-43-9	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Chromium	7440-47-3	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Cobalt	7440-48-4	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Copper	7440-50-8	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
Vanadium	7440-62-2	LA-505-411		16.7	ug/L			1.00	7.0		06/23/08
Zinc	7440-66-6	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-004
Sample # W08P002403
Client ID: B1TWK7 GPP-PNNL TRENT WSCF **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Calcium	7440-70-2	LA-505-411		8.63e+04	ug/L			1.00	34		06/23/08
Strontium	7440-24-6	LA-505-411		447	ug/L			1.00	4.0		06/23/08
Beryllium	7440-41-7	LA-505-411	U	< 4.00	ug/L			1.00	4.0		06/23/08
ICP-200.8 MS All possible meta Prep											**06/09/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412	X	4.93	ug/L			1.00	0.0500		06/09/08
Total Alkalinity as mg/L CaCO3											
Total Alkalinity as mg/L CaCO3	ALKALINITY	LA-531-411		99.0	mg/L			1.00	1.0		05/28/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002404
Client ID: B1V5C1 GPP-PNNL TRENT WSCF **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Sulfate	14808-79-8	LA-533-410	D	165	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002406
Client ID: B1V5C2 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Sulfate	14808-79-8	LA-533-410	DU	< 0.154	mg/L			2.00	0.15		05/20/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002407
Client ID: B1V5C6 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Sulfate	14808-79-8	LA-533-410	D	358	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002408
Client ID: B1V5C7 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography											
Sulfate	14808-79-8	LA-533-410	DU	< 0.154	mg/L			2.00	0.15		05/20/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002409
Client ID: B1V6R4 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	0.204	mg/L			3.00	0.063		05/16/08
Chloride	16887-00-6	LA-533-410	D	27.0	mg/L			3.00	0.33		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	BD	0.154	mg/L			3.00	0.030		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	4.66	mg/L			3.00	0.11		05/16/08
Sulfate	14808-79-8	LA-533-410	D	195	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002411
Client ID: B1V6R5 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	0.192	mg/L			3.00	0.063		05/16/08
Chloride	16887-00-6	LA-533-410	D	26.9	mg/L			3.00	0.33		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	BD	0.107	mg/L			3.00	0.030		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	4.60	mg/L			3.00	0.11		05/16/08
Sulfate	14808-79-8	LA-533-410	D	199	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002412
Client ID: B1V6T0 GPP-PNNL TRENT WSCF **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	< 0.0420	mg/L			2.00	0.042		05/16/08
Chloride	16887-00-6	LA-533-410	D	30.2	mg/L			2.00	0.22		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0198	mg/L			2.00	0.020		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	9.69	mg/L			2.00	0.072		05/16/08
Sulfate	14808-79-8	LA-533-410	D	133	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002413
Client ID: B1V6X2 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	< 0.0630	mg/L			3.00	0.063		05/16/08
Chloride	16887-00-6	LA-533-410	DN	26.3	mg/L			3.00	0.33		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	D	0.311	mg/L			3.00	0.030		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	4.85	mg/L			3.00	0.11		05/16/08
Sulfate	14808-79-8	LA-533-410	D	182	mg/L			10.00	0.77		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002421
Client ID: B1V6R1 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	< 0.0420	mg/L			2.00	0.042		05/16/08
Chloride	16887-00-6	LA-533-410	D	11.1	mg/L			2.00	0.22		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0198	mg/L			2.00	0.020		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	9.35	mg/L			2.00	0.072		05/16/08
Sulfate	14808-79-8	LA-533-410	D	89.4	mg/L			2.00	0.15		05/16/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-037
Sample # W08P002422
Client ID: B1V678 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Inorganic
Sampled: 05/16/08
Received: 05/16/08

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	0.216	mg/L			2.00	0.042		05/16/08
Chloride	16887-00-6	LA-533-410	DN	9.33	mg/L			2.00	0.22		05/16/08
Nitrogen in Nitrite	NO2-N	LA-533-410	DU	< 0.0198	mg/L			2.00	0.020		05/16/08
Nitrogen in Nitrate	NO3-N	LA-533-410	D	4.85	mg/L			2.00	0.072		05/16/08
Sulfate	14808-79-8	LA-533-410	D	22.8	mg/L			2.00	0.15		05/16/08
ICP-200.8 MS All possible meta Prep											**06/09/08**
ICP-200.8 MS All possible meta											
Uranium	7440-61-1	LA-505-412	X	1.56	ug/L			1.00	0.0500		06/09/08

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

B - The analyte < the RDL but > = the IDL/MDL (inorg)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 05/18/08
Receive Date:05/19/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002461											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Sulfate	14808-79-8	21.7361		RPD			1.070	20.000		05/19/08
MS	Sulfate	14808-79-8	1.81425	92.564	% Recov	80.000	120.000				05/19/08
MSD	Sulfate	14808-79-8	1.81445	92.574	% Recov	80.000	120.000				05/19/08
SPK-RPD	Sulfate	14808-79-8	92.574		RPD			0.011	20.000		05/20/08
Lab ID: W08P002464											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Sulfate	14808-79-8	43.2005		RPD			0.027	20.000		05/19/08
MS	Sulfate	14808-79-8	1.7881	91.230	% Recov	80.000	120.000				05/19/08
MSD	Sulfate	14808-79-8	1.7745	90.536	% Recov	80.000	120.000				05/19/08
SPK-RPD	Sulfate	14808-79-8	90.536		RPD			0.764	20.000		05/20/08
BATCH QC											
BLANK	Sulfate	14808-79-8	<0.154	n/a	mg/L	0.000	0.200			U	05/19/08
BLANK	Sulfate	14808-79-8	<0.154	n/a	mg/L	0.000	0.200			U	05/20/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	05/19/08
LCS	Sulfate	14808-79-8	400.9277	101.244	% Recov	80.000	120.000				05/19/08
LCS	Sulfate	14808-79-8	400.671	101.180	% Recov	80.000	120.000				05/19/08
Lab ID: W08P002398											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Chloride	16887-00-6	3.7806		RPD			0.053	20.000		05/16/08
DUP	Fluoride	16984-48-8	0.1892		RPD			0.422	20.000		05/16/08
DUP	Nitrogen in Nitrite	NO2-N	<1.98e-2		RPD			n/a	20.000	U	05/16/08
DUP	Nitrogen in Nitrate	NO3-N	0.3592		RPD			0.804	20.000		05/16/08
DUP	Sulfate	14808-79-8	13.4299		RPD			0.329	20.000		05/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081006
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 05/15/08
Receive Date:05/16/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	Chloride	16887-00-6	0.9801	98.503	% Recov	80.000	120.000				05/16/08
MS	Fluoride	16984-48-8	0.46675	94.675	% Recov	80.000	120.000				05/16/08
MS	Nitrogen in Nitrite	NO2-N	0.44445	90.335	% Recov	80.000	120.000				05/16/08
MS	Nitrogen in Nitrate	NO3-N	0.40855	91.603	% Recov	80.000	120.000				05/16/08
MS	Sulfate	14808-79-8	1.94595	99.283	% Recov	80.000	120.000				05/16/08
MSD	Chloride	16887-00-6	0.94715	95.191	% Recov	80.000	120.000				05/16/08
MSD	Fluoride	16984-48-8	0.46335	93.986	% Recov	80.000	120.000				05/16/08
MSD	Nitrogen in Nitrite	NO2-N	0.45875	93.242	% Recov	80.000	120.000				05/16/08
MSD	Nitrogen in Nitrate	NO3-N	0.4612	103.408	% Recov	80.000	120.000				05/16/08
MSD	Sulfate	14808-79-8	1.94285	99.125	% Recov	80.000	120.000				05/16/08
SPK-RPD	Chloride	16887-00-6	95.191		RPD			3.420	20.000		05/17/08
SPK-RPD	Fluoride	16984-48-8	93.986		RPD			0.730	20.000		05/17/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	93.242		RPD			3.167	20.000		05/17/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	103.408		RPD			12.107	20.000		05/17/08
SPK-RPD	Sulfate	14808-79-8	99.125		RPD			0.159	20.000		05/17/08

Lab ID: W08P002422
BATCH QC ASSOCIATED WITH SAMPLE

DUP	Chloride	16887-00-6	9.0952		RPD			2.580	20.000		05/16/08
DUP	Fluoride	16984-48-8	0.2362		RPD			8.842	20.000		05/16/08
DUP	Nitrogen in Nitrite	NO2-N	5.34e-2		RPD			n/a	20.000		05/16/08
DUP	Nitrogen in Nitrate	NO3-N	4.835		RPD			0.388	20.000		05/16/08
DUP	Sulfate	14808-79-8	22.7486		RPD			0.172	20.000		05/16/08
MS	Chloride	16887-00-6	0.7575	76.131	% Recov	80.000	120.000				05/16/08
MS	Fluoride	16984-48-8	0.47235	95.811	% Recov	80.000	120.000				05/16/08
MS	Nitrogen in Nitrite	NO2-N	0.45355	92.185	% Recov	80.000	120.000				05/16/08
MS	Nitrogen in Nitrate	NO3-N	0.4703	105.448	% Recov	80.000	120.000				05/16/08
MS	Sulfate	14808-79-8	1.81335	92.518	% Recov	80.000	120.000				05/16/08
MSD	Chloride	16887-00-6	0.93645	94.116	% Recov	80.000	120.000				05/16/08
MSD	Fluoride	16984-48-8	0.49715	100.842	% Recov	80.000	120.000				05/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 05/16/08
Receive Date:05/16/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Nitrogen in Nitrite	NO2-N	0.45535	92.551	% Recov	80.000	120.000				05/16/08
MSD	Nitrogen in Nitrate	NO3-N	0.44875	100.617	% Recov	80.000	120.000				05/16/08
MSD	Sulfate	14808-79-8	1.84775	94.273	% Recov	80.000	120.000				05/16/08
SPK-RPD	Chloride	16887-00-6	94.116		RPD			21.128	20.000 *		05/17/08
SPK-RPD	Fluoride	16984-48-8	100.842		RPD			5.117	20.000		05/17/08
SPK-RPD	Nitrogen in Nitrite	NO2-N	92.551		RPD			0.396	20.000		05/17/08
SPK-RPD	Nitrogen in Nitrate	NO3-N	100.617		RPD			4.689	20.000		05/17/08
SPK-RPD	Sulfate	14808-79-8	94.273		RPD			1.879	20.000		05/17/08

BATCH QC

BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	05/16/08
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	05/16/08
BLANK	Chloride	16887-00-6	<0.11	n/a	mg/L	0.000	0.030			U	05/17/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	05/16/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	05/16/08
BLANK	Fluoride	16984-48-8	<2.1e-2	n/a	mg/L	0.000	0.030			U	05/17/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	05/16/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	05/16/08
BLANK	Nitrogen in Nitrite	NO2-N	<9.9e-3	n/a	mg/L	0.000	0.020			U	05/17/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	05/16/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	05/17/08
BLANK	Nitrogen in Nitrate	NO3-N	<3.6e-2	n/a	mg/L	0.000	0.040			U	05/16/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	05/16/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	05/17/08
BLANK	Sulfate	14808-79-8	<7.7e-2	n/a	mg/L	0.000	0.200			U	05/16/08
LCS	Chloride	16887-00-6	199.5711	99.289	% Recov	80.000	120.000				05/16/08
LCS	Chloride	16887-00-6	201.2895	100.144	% Recov	80.000	120.000				05/16/08
LCS	Fluoride	16984-48-8	89.6203	89.980	% Recov	80.000	120.000				05/16/08
LCS	Fluoride	16984-48-8	92.7464	93.119	% Recov	80.000	120.000				05/16/08
LCS	Nitrogen in Nitrite	NO2-N	93.5517	94.116	% Recov	80.000	120.000				05/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081006
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
LCS	Nitrogen in Nitrite	NO2-N	98.0861	98.678	% Recov	80.000	120.000				05/16/08
LCS	Nitrogen in Nitrate	NO3-N	88.6509	98.392	% Recov	80.000	120.000				05/16/08
LCS	Nitrogen in Nitrate	NO3-N	90.8419	100.823	% Recov	80.000	120.000				05/16/08
LCS	Sulfate	14808-79-8	394.0551	99.509	% Recov	80.000	120.000				05/16/08
LCS	Sulfate	14808-79-8	404.291	102.094	% Recov	80.000	120.000				05/16/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
Matrix: WATER
Test: Cyanide by Midi/Spectrophotom

Sample Date: 05/13/08
Receive Date:05/13/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002298											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Cyanide by Midi/Spectrophotom	57-12-5	106	265.000	% Recov	75.000	125.000		•		05/28/08
MSD	Cyanide by Midi/Spectrophotom	57-12-5	112	280.000	% Recov	75.000	125.000		•		05/28/08
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	280.000		RPD			5.505	20.000		05/28/08
BATCH QC											
BLANK	Cyanide by Midi/Spectrophotom	57-12-5	< 4	n/a	ug/L	-4.000	4.000			U	05/28/08
LCS	Cyanide by Midi/Spectrophotom	57-12-5	55.9	111.800	% Recov	85.000	115.000				05/28/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 05/14/08
Receive Date:05/14/08

Lab ID: W08P002346
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	905.4	90.540	% Recov	75.000	125.000				06/23/08
MS	Barium	7440-39-3	450.1	90.020	% Recov	75.000	125.000				06/23/08
MS	Beryllium	7440-41-7	475.8	95.160	% Recov	75.000	125.000				06/23/08
MS	Calcium	7440-70-2	380	38.000	% Recov	75.000	125.000			•	06/23/08
MS	Cadmium	7440-43-9	924.1	92.410	% Recov	75.000	125.000				06/23/08
MS	Cobalt	7440-48-4	899.7	89.970	% Recov	75.000	125.000				06/23/08
MS	Chromium	7440-47-3	875.2	87.520	% Recov	75.000	125.000				06/23/08
MS	Copper	7440-50-8	910.9	91.090	% Recov	75.000	125.000				06/23/08
MS	Iron	7439-89-6	703	70.300	% Recov	75.000	125.000			•	06/23/08
MS	Potassium	7440-09-7	9416	94.160	% Recov	75.000	125.000				06/23/08
MS	Magnesium	7439-95-4	520	52.000	% Recov	75.000	125.000			•	06/23/08
MS	Manganese	7439-96-5	908.7	90.870	% Recov	75.000	125.000				06/23/08
MS	Sodium	7440-23-5	170	17.000	% Recov	75.000	125.000			•	06/23/08
MS	Nickel	7440-02-0	904.7	90.470	% Recov	75.000	125.000				06/23/08
MS	Antimony	7440-36-0	956.8	95.680	% Recov	75.000	125.000				06/23/08
MS	Strontium	7440-24-6	460.3	92.060	% Recov	75.000	125.000				06/23/08
MS	Vanadium	7440-62-2	903	90.300	% Recov	75.000	125.000				06/23/08
MS	Zinc	7440-66-6	930.3	93.030	% Recov	75.000	125.000				06/23/08
MSD	Silver	7440-22-4	919.1	91.910	% Recov	75.000	125.000				06/23/08
MSD	Barium	7440-39-3	457.4	91.480	% Recov	75.000	125.000				06/23/08
MSD	Beryllium	7440-41-7	477.3	95.460	% Recov	75.000	125.000				06/23/08
MSD	Calcium	7440-70-2	510	51.000	% Recov	75.000	125.000			•	06/23/08
MSD	Cadmium	7440-43-9	929.5	92.950	% Recov	75.000	125.000				06/23/08
MSD	Cobalt	7440-48-4	902.2	90.220	% Recov	75.000	125.000				06/23/08
MSD	Chromium	7440-47-3	871.8	87.180	% Recov	75.000	125.000				06/23/08
MSD	Copper	7440-50-8	919.6	91.960	% Recov	75.000	125.000				06/23/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 05/14/08
Receive Date:05/14/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Iron	7439-89-6	702	70.200	% Recov	75.000	125.000			•	06/23/08
MSD	Potassium	7440-09-7	9596	95.960	% Recov	75.000	125.000				06/23/08
MSD	Magnesium	7439-95-4	800	80.000	% Recov	75.000	125.000				06/23/08
MSD	Manganese	7439-96-5	912.5	91.250	% Recov	75.000	125.000				06/23/08
MSD	Sodium	7440-23-5	520	52.000	% Recov	75.000	125.000			•	06/23/08
MSD	Nickel	7440-02-0	904.9	90.490	% Recov	75.000	125.000				06/23/08
MSD	Antimony	7440-36-0	947.6	94.760	% Recov	75.000	125.000				06/23/08
MSD	Strontium	7440-24-6	469.8	93.960	% Recov	75.000	125.000				06/23/08
MSD	Vanadium	7440-62-2	899.3	89.930	% Recov	75.000	125.000				06/23/08
MSD	Zinc	7440-66-6	938.6	93.860	% Recov	75.000	125.000				06/23/08
SPK-RPD	Silver	7440-22-4	91.910		RPD			1.502	20.000		06/23/08
SPK-RPD	Barium	7440-39-3	91.480		RPD			1.609	20.000		06/23/08
SPK-RPD	Beryllium	7440-41-7	95.460		RPD			0.315	20.000		06/23/08
SPK-RPD	Calcium	7440-70-2	51.000		RPD			29.213	20.000	•	06/23/08
SPK-RPD	Cadmium	7440-43-9	92.950		RPD			0.583	20.000		06/23/08
SPK-RPD	Cobalt	7440-48-4	90.220		RPD			0.277	20.000		06/23/08
SPK-RPD	Chromium	7440-47-3	87.180		RPD			0.389	20.000		06/23/08
SPK-RPD	Copper	7440-50-8	91.960		RPD			0.951	20.000		06/23/08
SPK-RPD	Iron	7439-89-6	70.200		RPD			0.142	20.000		06/23/08
SPK-RPD	Potassium	7440-09-7	95.960		RPD			1.894	20.000		06/23/08
SPK-RPD	Magnesium	7439-95-4	80.000		RPD			42.424	20.000	•	06/23/08
SPK-RPD	Manganese	7439-96-5	91.250		RPD			0.417	20.000		06/23/08
SPK-RPD	Sodium	7440-23-5	52.000		RPD			101.449	20.000	•	06/23/08
SPK-RPD	Nickel	7440-02-0	90.490		RPD			0.022	20.000		06/23/08
SPK-RPD	Antimony	7440-36-0	94.760		RPD			0.966	20.000		06/23/08
SPK-RPD	Strontium	7440-24-6	93.960		RPD			2.043	20.000		06/23/08
SPK-RPD	Vanadium	7440-62-2	89.930		RPD			0.411	20.000		06/23/08
SPK-RPD	Zinc	7440-66-6	93.860		RPD			0.888	20.000		06/23/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
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	06/23/08
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	06/23/08
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	06/23/08
BLANK	Calcium	7440-70-2	<34	n/a	ug/L					U	06/23/08
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	06/23/08
BLANK	Cobalt	7440-48-4	<4	n/a	ug/L					U	06/23/08
BLANK	Chromium	7440-47-3	<4	n/a	ug/L					U	06/23/08
BLANK	Copper	7440-50-8	<4	n/a	ug/L					U	06/23/08
BLANK	Iron	7439-89-6	<9	n/a	ug/L					U	06/23/08
BLANK	Potassium	7440-09-7	<45	n/a	ug/L					U	06/23/08
BLANK	Magnesium	7439-95-4	<6	n/a	ug/L					U	06/23/08
BLANK	Manganese	7439-96-5	5	5.000	ug/L						06/23/08
BLANK	Sodium	7440-23-5	<27	n/a	ug/L					U	06/23/08
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	06/23/08
BLANK	Antimony	7440-36-0	<32	n/a	ug/L					U	06/23/08
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	06/23/08
BLANK	Vanadium	7440-62-2	<7	n/a	ug/L					U	06/23/08
BLANK	Zinc	7440-66-6	<4	n/a	ug/L					U	06/23/08
LCS	Silver	7440-22-4	937.9	93.790	% Recov	80.000	120.000				06/23/08
LCS	Barium	7440-39-3	458.5	91.700	% Recov	80.000	120.000				06/23/08
LCS	Beryllium	7440-41-7	487	97.400	% Recov	80.000	120.000				06/23/08
LCS	Calcium	7440-70-2	1030	103.000	% Recov	80.000	120.000				06/23/08
LCS	Cadmium	7440-43-9	942.8	94.280	% Recov	80.000	120.000				06/23/08
LCS	Cobalt	7440-48-4	930.4	93.040	% Recov	80.000	120.000				06/23/08
LCS	Chromium	7440-47-3	928.9	92.890	% Recov	80.000	120.000				06/23/08
LCS	Copper	7440-50-8	943.8	94.380	% Recov	80.000	120.000				06/23/08
LCS	Iron	7439-89-6	938	93.800	% Recov	80.000	120.000				06/23/08
LCS	Potassium	7440-09-7	10010	100.100	% Recov	80.000	120.000				06/23/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081006
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	943.8	94.380	% Recov	80.000	120.000				06/23/08
LCS	Manganese	7439-96-5	932.6	93.260	% Recov	80.000	120.000				06/23/08
LCS	Sodium	7440-23-5	959	95.900	% Recov	80.000	120.000				06/23/08
LCS	Nickel	7440-02-0	940.8	94.080	% Recov	80.000	120.000				06/23/08
LCS	Antimony	7440-36-0	947.1	94.710	% Recov	80.000	120.000				06/23/08
LCS	Strontium	7440-24-6	471.2	94.240	% Recov	80.000	120.000				06/23/08
LCS	Vanadium	7440-62-2	931	93.100	% Recov	80.000	120.000				06/23/08
LCS	Zinc	7440-66-6	943.4	94.340	% Recov	80.000	120.000				06/23/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081006
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	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	06/09/08
LCS	Uranium	7440-61-1	39.88	99.700	% Recov	85.000	115.000				06/09/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20081006
Matrix: WATER
Test: Total Alkalinity as mg/L CaCO3

Sample Date: 05/16/08
Receive Date:05/16/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002403											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Total Alkalinity as mg/L CaCO3	ALKALINITY	99.0		RPD			0.000	20.000		05/28/08
BATCH QC											
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	123.5	107.391	%Recove	80.000	120.000				05/28/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	114.8	99.826	%Recove	80.000	120.000				05/28/08
LCS	Total Alkalinity as mg/L CaCO3	ALKALINITY	115.0	100.000	%Recove	80.000	120.000				05/28/08

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-004
Sample # W08P002403
Client ID: B1TWK7 GPP-PNNL WSCF TRENT **Matrix:** WATER

Group #: WSCF20081006
Department: Radiochemistry
Sampled: 05/16/08
Received: 05/16/08

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		3.00e+03	pCi/L	+-600	pCi/L	1.00	6.0		05/23/08
Tritium by Liq Sct column prep											
Tritium	10028-17-8	LA-508-421		470	pCi/L	+-174	pCi/L	1.00	2.2e+02		05/23/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-037
Sample # W08P002422
Client ID: B1V678 GPP-PNNL TRENT WSCF **Matrix:** WATER

Group #: WSCF20081006
Department: Radiochemistry
Sampled: 05/16/08
Received: 05/16/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Tritium by Liq Sct column prep											
Tritium	10028-17-8	LA-508-421	U	92.0	pCi/L	+-106	pCi/L	1.00	2.2e+02		05/23/08

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)
N - Spike sample recovery is outside control limits.(inorg)
X - Other flags/notes described in the comments/narrative(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Radiochemistry**

SDG Number: WSCF20081006
Matrix: WATER
Test: TC99 by Liquid Scin.

Sample Date: 05/15/08
Receive Date:05/16/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002401											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tc-99 by Liquid Scin.	14133-76-7	U-3.8		RPD			n/a	20.000		05/23/08
MS	Tc-99 by Liquid Scin.	14133-76-7	795.2	105.717	% Recov	75.000	125.000				05/23/08
BATCH QC											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U1.5	n/a	pCi/L	-10.000	10.000				05/23/08
LCS	Tc-99 by Liquid Scin.	14133-76-7	199.2	105.901	% Recov	80.000	120.000				05/23/08

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Radiochemistry**

SDG Number: WSCF20081006
Matrix: WATER
Test: Tritium by Liq Sct column prep

Sample Date: 03/05/08
Receive Date:03/05/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002375											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tritium	10028-17-8	6.7E+03		RPD			4.380	20.000		05/23/08
MS	Tritium	10028-17-8	23310	89.687	% Recov	75.000	125.000				05/23/08
BATCH QC											
BLANK	Tritium	10028-17-8	U-1.1E+02	n/a	pCi/L	-10.000	1000.000				05/23/08
LCS	Tritium	10028-17-8	3190.0	92.595	% Recov	80.000	120.000				05/23/08

M4W41-SLF-08-667

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 14 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
6/30/08

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP
PO#: 122543
Group#: 20081006

The following samples were received from you on 05/16/08. 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
W08P002402	B1TWK6	GPP-PNNL @GPP6010	TRENT Water	05/16/08
W08P002403	B1TWK7	GPP-PNNL @2008 ALKALI	TRENT Water @GPP6010 @H3-33 @IC-30 @TC99-30 CN-02	05/16/08
W08P002404	B1V5C1	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002406	B1V5C2	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002407	B1V5C6	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002408	B1V5C7	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002409	B1V6R4	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002411	B1V6R5	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002412	B1V6T0	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002413	B1V6X2	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002421	B1V6R1	GPP-PNNL @IC-30	TRENT Water	05/16/08
W08P002422	B1V678	GPP-PNNL @2008	TRENT Water @H3-33 @IC-30	05/16/08

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

GPAP

Richland, WA 99352
Attn: Steve Trent E6-35

Customer Code: PNNL-GPP
PO#: 122543
Group#: 20081006

Test Acronym Description

Test Acronym	Description
@TC99-30	TC99 by Liquid Scin.
ALKALI	Total Alkalinity as mg/L CaCO3
CN-02	Cyanide by Midi/Spectrophotom

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

S08-004-851

Collector FLUOR HANFORD R.F. CARRIGAN	Contact/Requester Steve Trent	Telephone No. 509-373-5869 MSIN FAX
SAF No. S08-004	Sampling Origin Hanford Site	Purchase Order/Charge Code
Project Title SURV. APRIL 2008	HNF-N-506-15	Ice Chest No. SAWS-107 Temp.
Shipped To (Lab) Waste Sampling & Characterization	Method of Shipment Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol SURV 20081006	Priority: 45 Days	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
B1TWK6 (F)	08P002102	W	5-15-08	0922	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	HNO3 to pH <2
B1TWK7	240	W			1x500-mL G/P	6010_METALS_ICP: List-3 (18)	HNO3 to pH <2
B1TWK7		W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	Cool~4C
B1TWK7		W			1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C
B1TWK7		W			1x1000-mL G/P	TC99_3MDSK_LSC: Tc-99 (1)	HCl to pH <2
B1TWK7		W			1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None
B1TWK7		W			1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2
B1TWK7		W			1x250-mL G/P	335.2_CYANIDE: Cyanide (1)	NaOH to pH >= 12 Cool~4C

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
FLUOR HANFORD R.F. CARRIGAN	R.F. Carrigan		MAY 16 2008 1035	RB Hulse	RB Hulse		MAY 16 2008 1035
RB Hulse	RB Hulse		5-16-08 1305	[illegible]	[illegible]		5/16/08 1305
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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I08-035-5

Collector: R. Ellingsworth	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-035	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 100HR3IAM(1/2) MAY 2008	HWF-N-506 12	Ice Chest No. Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V5C1	W0SP00240	W	5-16-08	0355	1x500-mL P	300.0_ANIONS_IC: Sulfate (1)	Cool~4C

ICED

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
R. Ellingsworth		MAY 16 2008 1220			MAY 16 2008 1220
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 = Wipe	
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

I08-035-6

Collector: R. Ellingsworth	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-035	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 100HR3IAM(1/2) MAY 2008	HNF-N-506 12	Ice Chest No. Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V5C2	W0(P0)2Y0b	W	5-16-08	0800	1x500-mL P	300.0_ANIONS_IC: Sulfate (1)	Cool~4C

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R. Ellingsworth			MAY 16 2008 1220				MAY 16 2008 1220
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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-035-13

Collector: R. Ellingsworth	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-035	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 100HR3IAM(1/2) MAY 2008	HNF-N-506 12	Ice Chest No. Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V5C6	W08P002107	W	5-16-08	1016	1x500-mL P	300.0_ANIONS_IC: Sulfate (1)	Cool~4C

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R. Ellingsworth			MAY 16 2008 1220		Victor Bins		MAY 16 2008 1220
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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 108-035-14

Page 1 of 1

Collector: R. Ellingsworth	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: 108-035	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 100HR3IAM(1/2), MAY 2008	HWF-W-506 12	Ice Chest No. Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V5C7	W06W2404	W	5-16-08	0930	1x500-mL P	300.0_ANIONS_IC: Sulfate (1)	Cool~4C

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Relinquished By	Date/Time	Received By	Date/Time
Print: R. Ellingsworth Sign: [signature]	MAY 16 2008 1220	Print: Victor Bins Sign: [signature]	MAY 16 2008 1220
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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-039-10

Page 1 of 1

Collector Scott E. Hamaker	**Contact/Requester** Steve Trent	**Telephone No.** 509-373-5869 **MSIN** **FAX**
SAF No. I08-039	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title ISRM MAY 2008	HWF-N-506 13	**Ice Chest No.** 009 **Temp.**
Shipped To (Lab) Waste Sampling & Characterization	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.**
Protocol CERCLA	**Priority:** 45 Days	**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
B1V6R4	W0P002427	W	5-16-08	1025	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

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Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
Scott E. Hamaker	Scott E. Hamaker	MAY 16 2008 1220	Victor J. Silva	Victor J. Silva	MAY 16 2008 1220

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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-039-11

Collector: Scott E. Hamaker	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: ISRM, MAY 2008	HNF-N-506 13	Ice Chest No.: CO9 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V6R5	W08P002411	W	5-16-08	1025	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

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Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
Scott E. Hamaker	Scott Hamaker	MAY 16 2008 1220	Victor Bin		MAY 16 2008 1220
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 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

I08-039-18

Collector: Scott E. Hamaker	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: 108-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: ISRM, MAY 2008	HWF-N-506 13	Ice Chest No.: 009 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V6T0	W08022412	W	5-16-08	1104	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

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Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Scott E. Hamaker	MAY 16 2008 1220	Victor Bruce	MAY 16 2008 1220

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

I08-039-78

Collector: Scott E. Hamaker	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: 108-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: ISRM, MAY 2008	HNF-N-506 13	Ice Chest No.: 009 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V6X2	W08P002913	W	5-16-08	0927	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
Scott E. Hamaker	Scott E. Hamaker	MAY 16 2008 1220	[illegible]	[illegible]	1220 MAY 16 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

FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-039-6

Collector: Scott E. Hamaker	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: ISRM, MAY 2008	HNF-N-506 13	Ice Chest No.: 009 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	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
B1V6R1	1x08P002424	W	5-16-08	1145	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C

Relinquished By	Received By
Print: Scott E. Hamaker Sign: Scott Hamaker Date/Time: MAY 16 2008 1245	Print: Victor Bins Sign: Date/Time: 1240 MAY 16 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

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FLUOR HANFORD

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

I08-037-33

Collector: FLUOR HANFORD R.F. CARRIGAN	Contact/Requester: Steve Trent	Telephone No.: 509-373-5869 MSIN FAX
SAF No.: I08-037	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 2UPL MAY 2008	HNF-IN-806-15	Ice Chest No.: SAWS-107 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: SURV	Priority: 45 Days	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
B1V678	W48P002422	W	5-16-08	12:15	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	HNO3 to pH <2
B1V678		W	↓	↓	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool~4C
B1V678		W	↓	↓	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None

ICED

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
FLUOR HANFORD R.F. CARRIGAN	R.F. Carrigan		MAY 16 2008 1250			K Bebo	MAY 16 2008 1250
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

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