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

1214117

FLUOR

Memorandum

M4W41-SLF-07-431

To: H. Hampt E6-35 Date: July 5, 2007

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

cc: w/Attachments

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

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20070918

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. 8, Waste Sampling & Characterization Facility Quality Assurance Plan

This transmittal contains the following information for sample delivery group WSCF20070918:

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

SLF/grf

Attachments 4

RECEIVED
MAY 22 2012
EDMC

JUL 16 2007

M4W41-SLF-07-431

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20070918
Data Deliverable Date: 12-jul-2007
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I07-042	B1N2L1	W07P000974	WATER
	B1N2L2	W07P000975	WATER

M4W41-SLF-07-431

ATTACHMENT 2

NARRATIVE

Consisting of 3 pages
Including cover page

Sample Delivery Group	WSCF20070918
Sample Matrix	Water
Data Deliverable	Summary Report

Introduction

Two (2) groundwater samples were received at the WSCF Laboratory on May 30, 2007. Samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Letter of Instruction for Analytical Services for the Groundwater Remediation Project in support of the Performance Assessment Project*, 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. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 11 through 12, 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 15 through 16 for QC details. Analytical Note:

- Sample results are B flagged if the results are less than the reportable limit, but greater than the method detection limit.

All QC controls are within the established limits.

ICP-AES Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See pages 17 through 20 for QC details. Analytical Notes:

- Matrix Spike and Matrix Spike Duplicate were analyzed on sample# B1MN44 (SDG# 20070896).
- Sample results were D flagged (dilution).

- Calcium, Chromium, Iron and Magnesium contamination detected in the Blank was evaluated and sample results for Chromium and Iron were also C flagged.

- Zinc – Matrix Spike and Matrix Spike Duplicate recoveries were less than established laboratory limits; sample result for Zinc was N flagged.

- Barium – Matrix Spike recover was less than established limits, however the Matrix Spike Duplicate recovery was within limits. No flag issued.

- Calcium, Magnesium and Sodium – insufficient spike concentrations. Sample concentrations were greater than four times the spike concentration. For results higher than the highest calibration standard, a high-level standard and an ICP interference check sample were analyzed to ensure acceptable sample results.

All other QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – There are no hold times associated with WSCF's radiochemical methods. A Duplicate, Matrix Spike, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 23 for QC details. Analytical Note:

- Duplicate and Matrix Spike were analyzed on sample# B1N2Y5 (SDG# 20070896).

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

Abbreviations
Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
AEA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

M4W41-SLF-07-431

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 17 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

GPAP
Richland, WA 99352

Attention: DL Stewart K6-96

Analytical: S. Fitzgerald 7/5/07

Client Services: P.D. Mix 7/5/2007

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#: WSCF20070918
Report Date: 5-jul-2007
Report WGPP/ver. 5.2
GPAP

w13qlog v4.2 05-jul-2007 10:13:35

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20070918

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
32010	2	32394	36489	BLANK		Anions by Ion Chromatography
32010	8	32394	36489	BLANK		Anions by Ion Chromatography
32010	3	32394	36489	LCS		Anions by Ion Chromatography
32010	5	32394	36489	DUP	W07P000975	Anions by Ion Chromatography
32010	6	32394	36489	MS	W07P000975	Anions by Ion Chromatography
32010	7	32394	36489	MSD	W07P000975	Anions by Ion Chromatography
32010	4	32394	36489	SAMPLE	W07P000975	Anions by Ion Chromatography
32010	7	32394	36489	SPK-RPD	W07P000975	Anions by Ion Chromatography
32090	1	32471	36870	BLANK		ICP Metals Analysis, Grd H20 P
32090	2	32471	36870	LCS		ICP Metals Analysis, Grd H20 P
32090	4	32471	36870	MS	W07P000955	ICP Metals Analysis, Grd H20 P
32090	5	32471	36870	MSD	W07P000955	ICP Metals Analysis, Grd H20 P
32090	5	32471	36870	SPK-RPD	W07P000955	ICP Metals Analysis, Grd H20 P
32090	13	32471	36870	SAMPLE	W07P000974	ICP Metals Analysis, Grd H20 P

w13qlog v4.2 05-jul-2007 10:13:35

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20070918

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
32127	1	32508	36613	BLANK		Tritium by Liq Sct column prep
32127	4	32508	36613	LCS		Tritium by Liq Sct column prep
32127	3	32508	36613	DUP	W07P000970	Tritium by Liq Sct column prep
32127	2	32508	36613	MS	W07P000970	Tritium by Liq Sct column prep
32127	8	32508	36613	SAMPLE	W07P000975	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-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: 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: DL Stewart K6-96
SAF Number: I07-042
Sample # W07P000974
Client ID: B1N2L1 STEWART WSCF

Matrix: WATER

Group #: WSCF20070918
Department: Inorganic
Sampled: 05/30/07
Received: 05/30/07

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP Metals Analysis, Grd H20 P Prep											**06/06/07**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411	CD	117	ug/L			2.00	18		07/02/07
Magnesium	7439-95-4	LA-505-411	D	3.15e+03	ug/L			2.00	12		07/02/07
Manganese	7439-96-5	LA-505-411	DU	< 8.00	ug/L			2.00	8.0		07/02/07
Nickel	7440-02-0	LA-505-411	DU	< 8.00	ug/L			2.00	8.0		07/02/07
Potassium	7440-09-7	LA-505-411	D	6.53e+03	ug/L			2.00	90		07/02/07
Silver	7440-22-4	LA-505-411	DU	< 10.0	ug/L			2.00	10		07/02/07
Sodium	7440-23-5	LA-505-411	D	4.46e+04	ug/L			2.00	54		07/02/07
Antimony	7440-36-0	LA-505-411	DU	< 64.0	ug/L			2.00	64		07/02/07
Barium	7440-39-3	LA-505-411	D	3.35e+03	ug/L			2.00	8.0		07/02/07
Cadmium	7440-43-9	LA-505-411	DU	< 8.00	ug/L			2.00	8.0		07/02/07
Chromium	7440-47-3	LA-505-411	CD	13.8	ug/L			2.00	8.0		07/02/07
Cobalt	7440-48-4	LA-505-411	DU	< 8.00	ug/L			2.00	8.0		07/02/07
Copper	7440-50-8	LA-505-411	D	17.4	ug/L			2.00	8.0		07/02/07
Vanadium	7440-62-2	LA-505-411	DU	< 14.0	ug/L			2.00	14		07/02/07
Zinc	7440-66-6	LA-505-411	DN	2.76e+03	ug/L			2.00	8.0		07/02/07
Calcium	7440-70-2	LA-505-411	D	1.63e+04	ug/L			2.00	68		07/02/07
Strontium	7440-24-6	LA-505-411	D	119	ug/L			2.00	8.0		07/02/07
Beryllium	7440-41-7	LA-505-411	DU	< 8.00	ug/L			2.00	8.0		07/02/07

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

B - The analyte < the RDL but > = the IDL/MDL (inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
C - The Analyte was found in the Associated Blank.(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

Report WGPP/ver. 5.2
GPAP

WSCF
ANALYTICAL RESULTS REPORT

Attention: DL Stewart K6-96
SAF Number: I07-042
Sample # W07P000975
Client ID: B1N2L2 STEWART WSCF
Matrix: WATER

Group #: WSCF20070918
Department: Inorganic
Sampled: 05/30/07
Received: 05/30/07

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	B	0.0390	mg/L			1.00	4.6e-03		05/30/07
Chloride	16887-00-6	LA-533-410		1.17	mg/L			1.00	0.032		05/30/07
Nitrogen in Nitrite	NO2-N	LA-533-410		0.126	mg/L			1.00	0.013		05/30/07
Nitrogen in Nitrate	NO3-N	LA-533-410		0.691	mg/L			1.00	4.8e-03		05/30/07
Sulfate	14808-79-8	LA-533-410		8.10	mg/L			1.00	0.068		05/30/07

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

B - The analyte < the RDL but > = the IDL/MDL (inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
C - The Analyte was found in the Associated Blank.(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

Report WGPP/ver. 5.2
GPAP

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date: 05/30/07
Receive Date:05/30/07

Lab ID: W07P000975

BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
DUP	Chloride	16887-00-6	1.162		RPD			0.712	20.000		05/30/07
DUP	Fluoride	16984-48-8	3.74e-2		RPD			4.188	20.000		05/30/07
DUP	Nitrogen in Nitrite	NO2-N	0.1269		RPD			1.030	20.000		05/30/07
DUP	Nitrogen in Nitrate	NO3-N	0.6912		RPD			0.043	20.000		05/30/07
DUP	Sulfate	14808-79-8	8.0739		RPD			0.354	20.000		05/30/07
MS	Chloride	16887-00-6	0.9724	98.222	% Recov	75.000	125.000				05/30/07
MS	Fluoride	16984-48-8	0.5012	99.841	% Recov	75.000	125.000				05/30/07
MS	Nitrogen in Nitrite	NO2-N	0.5009	101.602	% Recov	75.000	125.000				05/30/07
MS	Nitrogen in Nitrate	NO3-N	0.4666	103.459	% Recov	75.000	125.000				05/30/07
MS	Sulfate	14808-79-8	1.9766	99.828	% Recov	75.000	125.000				05/30/07
MSD	Chloride	16887-00-6	0.9417	95.121	% Recov	75.000	125.000				05/30/07
MSD	Fluoride	16984-48-8	0.502	100.000	% Recov	75.000	125.000				05/30/07
MSD	Nitrogen in Nitrite	NO2-N	0.4946	100.325	% Recov	75.000	125.000				05/30/07
MSD	Nitrogen in Nitrate	NO3-N	0.4678	103.725	% Recov	75.000	125.000				05/30/07
MSD	Sulfate	14808-79-8	1.8988	95.899	% Recov	75.000	125.000				05/30/07
SPK-RPD	Chloride	16887-00-6	95.121		RPD			3.208	20.000		05/30/07
SPK-RPD	Fluoride	16984-48-8	100.000		RPD			0.159	20.000		05/30/07
SPK-RPD	Nitrogen in Nitrite	NO2-N	100.325		RPD			1.265	20.000		05/30/07
SPK-RPD	Nitrogen in Nitrate	NO3-N	103.725		RPD			0.257	20.000		05/30/07
SPK-RPD	Sulfate	14808-79-8	95.899		RPD			4.015	20.000		05/30/07

BATCH QC

BLANK	Chloride	16887-00-6	<3.2e-2	n/a	mg/L	0.000	0.030			U	05/30/07
BLANK	Chloride	16887-00-6	<3.2e-2	n/a	mg/L	0.000	0.030			U	05/30/07
BLANK	Fluoride	16984-48-8	<4.6e-3	n/a	mg/L	0.000	0.030			U	05/30/07
BLANK	Fluoride	16984-48-8	<4.6e-3	n/a	mg/L	0.000	0.030			U	05/30/07

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
Matrix: WATER
Test: Anions by Ion Chromatography

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Nitrogen in Nitrite	NO2-N	<1.3e-2	n/a	mg/L	0.000	0.020			U	05/30/07
BLANK	Nitrogen in Nitrite	NO2-N	<1.3e-2	n/a	mg/L	0.000	0.020			U	05/30/07
BLANK	Nitrogen in Nitrate	NO3-N	<4.8e-3	n/a	mg/L	0.000	0.040			U	05/30/07
BLANK	Nitrogen in Nitrate	NO3-N	<4.8e-3	n/a	mg/L	0.000	0.040			U	05/30/07
BLANK	Sulfate	14808-79-8	<6.8e-2	n/a	mg/L	0.000	0.200			U	05/30/07
BLANK	Sulfate	14808-79-8	<6.8e-2	n/a	mg/L	0.000	0.200			U	05/30/07
LCS	Chloride	16887-00-6	194.9704	97.485	% Recov	80.000	120.000				05/30/07
LCS	Fluoride	16984-48-8	102.0286	101.018	% Recov	80.000	120.000				05/30/07
LCS	Nitrogen in Nitrite	NO2-N	100.0442	100.446	% Recov	80.000	120.000				05/30/07
LCS	Nitrogen in Nitrate	NO3-N	93.2151	102.210	% Recov	80.000	120.000				05/30/07
LCS	Sulfate	14808-79-8	390.1088	97.527	% Recov	80.000	120.000				05/30/07

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 05/24/07
Receive Date:05/24/07

Lab ID: W07P000955
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	971.6	97.160	% Recov	75.000	125.000				07/02/07
MS	Barium	7440-39-3	139	27.800	% Recov	75.000	125.000				07/02/07
MS	Beryllium	7440-41-7	522.5	104.500	% Recov	75.000	125.000				07/02/07
MS	Calcium	7440-70-2	NA	n/a	% Recov	75.000	125.000				07/02/07
MS	Cadmium	7440-43-9	982.7	98.270	% Recov	75.000	125.000				07/02/07
MS	Cobalt	7440-48-4	1004	100.400	% Recov	75.000	125.000				07/02/07
MS	Chromium	7440-47-3	990.7	99.070	% Recov	75.000	125.000				07/02/07
MS	Copper	7440-50-8	995.7	99.570	% Recov	75.000	125.000				07/02/07
MS	Iron	7439-89-6	1027.5	102.750	% Recov	75.000	125.000				07/02/07
MS	Potassium	7440-09-7	8543	85.430	% Recov	75.000	125.000				07/02/07
MS	Magnesium	7439-95-4	NA	n/a	% Recov	75.000	125.000				07/02/07
MS	Manganese	7439-96-5	1001	100.100	% Recov	75.000	125.000				07/02/07
MS	Sodium	7440-23-5	NA	n/a	% Recov	75.000	125.000				07/02/07
MS	Nickel	7440-02-0	984.3	98.430	% Recov	75.000	125.000				07/02/07
MS	Antimony	7440-36-0	1042	104.200	% Recov	75.000	125.000				07/02/07
MS	Strontium	7440-24-6	537.3	107.460	% Recov	75.000	125.000				07/02/07
MS	Vanadium	7440-62-2	1010.7	101.070	% Recov	75.000	125.000				07/02/07
MS	Zinc	7440-66-6	151	15.100	% Recov	75.000	125.000				07/02/07
MSD	Silver	7440-22-4	959.3	95.930	% Recov	75.000	125.000				07/02/07
MSD	Barium	7440-39-3	444	88.800	% Recov	75.000	125.000				07/02/07
MSD	Beryllium	7440-41-7	515	103.000	% Recov	75.000	125.000				07/02/07
MSD	Calcium	7440-70-2	NA	n/a	% Recov	75.000	125.000				07/02/07
MSD	Cadmium	7440-43-9	969.1	96.910	% Recov	75.000	125.000				07/02/07
MSD	Cobalt	7440-48-4	986.9	98.690	% Recov	75.000	125.000				07/02/07
MSD	Chromium	7440-47-3	988.7	98.870	% Recov	75.000	125.000				07/02/07
MSD	Copper	7440-50-8	993.7	99.370	% Recov	75.000	125.000				07/02/07

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
Matrix: WATER
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 05/24/07
Receive Date:05/24/07

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Iron	7439-89-6	1012.5	101.250	% Recov	75.000	125.000				07/02/07
MSD	Potassium	7440-09-7	8733	87.330	% Recov	75.000	125.000				07/02/07
MSD	Magnesium	7439-95-4	NA	n/a	% Recov	75.000	125.000				07/02/07
MSD	Manganese	7439-96-5	983.1	98.310	% Recov	75.000	125.000				07/02/07
MSD	Sodium	7440-23-5	NA	n/a	% Recov	75.000	125.000				07/02/07
MSD	Nickel	7440-02-0	968.1	96.810	% Recov	75.000	125.000				07/02/07
MSD	Antimony	7440-36-0	1050	105.000	% Recov	75.000	125.000				07/02/07
MSD	Strontium	7440-24-6	536.5	107.300	% Recov	75.000	125.000				07/02/07
MSD	Vanadium	7440-62-2	996.7	99.670	% Recov	75.000	125.000				07/02/07
MSD	Zinc	7440-66-6	-43	-4.300	% Recov	75.000	125.000		♦		07/02/07
SPK-RPD	Silver	7440-22-4	95.930		RPD			1.274	20.000		07/02/07
SPK-RPD	Barium	7440-39-3	88.800		RPD			104.631	20.000 ♦		07/02/07
SPK-RPD	Beryllium	7440-41-7	103.000		RPD			1.446	20.000		07/02/07
SPK-RPD	Calcium	7440-70-2			RPD			n/a	20.000		07/02/07
SPK-RPD	Cadmium	7440-43-9	96.910		RPD			1.394	20.000		07/02/07
SPK-RPD	Cobalt	7440-48-4	98.690		RPD			1.718	20.000		07/02/07
SPK-RPD	Chromium	7440-47-3	98.870		RPD			0.202	20.000		07/02/07
SPK-RPD	Copper	7440-50-8	99.370		RPD			0.201	20.000		07/02/07
SPK-RPD	Iron	7439-89-6	101.250		RPD			1.471	20.000		07/02/07
SPK-RPD	Potassium	7440-09-7	87.330		RPD			2.200	20.000		07/02/07
SPK-RPD	Magnesium	7439-95-4			RPD			n/a	20.000		07/02/07
SPK-RPD	Manganese	7439-96-5	98.310		RPD			1.804	20.000		07/02/07
SPK-RPD	Sodium	7440-23-5			RPD			n/a	20.000		07/02/07
SPK-RPD	Nickel	7440-02-0	96.810		RPD			1.659	20.000		07/02/07
SPK-RPD	Antimony	7440-36-0	105.000		RPD			0.765	20.000		07/02/07
SPK-RPD	Strontium	7440-24-6	107.300		RPD			0.149	20.000		07/02/07
SPK-RPD	Vanadium	7440-62-2	99.670		RPD			1.395	20.000		07/02/07
SPK-RPD	Zinc	7440-66-6	-4.300		RPD			359.259	20.000 ♦		07/02/07

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
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	07/02/07
BLANK	Barium	7440-39-3	<4	n/a	ug/L					U	07/02/07
BLANK	Beryllium	7440-41-7	<4	n/a	ug/L					U	07/02/07
BLANK	Calcium	7440-70-2	122	122.000	ug/L						07/02/07
BLANK	Cadmium	7440-43-9	<4	n/a	ug/L					U	07/02/07
BLANK	Cobalt	7440-48-4	<4	n/a	ug/L					U	07/02/07
BLANK	Chromium	7440-47-3	4.8	4.800	ug/L						07/02/07
BLANK	Copper	7440-50-8	<4	n/a	ug/L					U	07/02/07
BLANK	Iron	7439-89-6	22.3	22.300	ug/L						07/02/07
BLANK	Potassium	7440-09-7	<45	n/a	ug/L					U	07/02/07
BLANK	Magnesium	7439-95-4	9.8	9.800	ug/L						07/02/07
BLANK	Manganese	7439-96-5	<4	n/a	ug/L					U	07/02/07
BLANK	Sodium	7440-23-5	<27	n/a	ug/L					U	07/02/07
BLANK	Nickel	7440-02-0	<4	n/a	ug/L					U	07/02/07
BLANK	Antimony	7440-36-0	<32	n/a	ug/L					U	07/02/07
BLANK	Strontium	7440-24-6	<4	n/a	ug/L					U	07/02/07
BLANK	Vanadium	7440-62-2	<7	n/a	ug/L					U	07/02/07
BLANK	Zinc	7440-66-6	<4	n/a	ug/L					U	07/02/07
LCS	Silver	7440-22-4	982.3	98.230	% Recov	80.000	120.000				07/02/07
LCS	Barium	7440-39-3	508.5	101.700	% Recov	80.000	120.000				07/02/07
LCS	Beryllium	7440-41-7	528.1	105.620	% Recov	80.000	120.000				07/02/07
LCS	Calcium	7440-70-2	1077	107.700	% Recov	80.000	120.000				07/02/07
LCS	Cadmium	7440-43-9	1009	100.900	% Recov	80.000	120.000				07/02/07
LCS	Cobalt	7440-48-4	1019	101.900	% Recov	80.000	120.000				07/02/07
LCS	Chromium	7440-47-3	1026	102.600	% Recov	80.000	120.000				07/02/07
LCS	Copper	7440-50-8	1014	101.400	% Recov	80.000	120.000				07/02/07
LCS	Iron	7439-89-6	1049	104.900	% Recov	80.000	120.000				07/02/07
LCS	Potassium	7440-09-7	9641	96.410	% Recov	80.000	120.000				07/02/07

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20070918
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	991.4	99.140	% Recov	80.000	120.000				07/02/07
LCS	Manganese	7439-96-5	1014	101.400	% Recov	80.000	120.000				07/02/07
LCS	Sodium	7440-23-5	973.9	97.390	% Recov	80.000	120.000				07/02/07
LCS	Nickel	7440-02-0	997.5	99.750	% Recov	80.000	120.000				07/02/07
LCS	Antimony	7440-36-0	1043	104.300	% Recov	80.000	120.000				07/02/07
LCS	Strontium	7440-24-6	518.1	103.620	% Recov	80.000	120.000				07/02/07
LCS	Vanadium	7440-62-2	1025	102.500	% Recov	80.000	120.000				07/02/07
LCS	Zinc	7440-66-6	1025	102.500	% Recov	80.000	120.000				07/02/07

WSCF
ANALYTICAL COMMENT REPORT

Attention: DL Stewart K6-96

Group #: WSCF20070918
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-AES: High chromium, iron, magnesium, and calcium; "C" flag if applicable. Magnesium, sodium, and calcium sample results beyond effective spike range (spike results marked "NA"). Check and high standards used to ensure magnesium, sodium, and calcium linearity because sample results are greater than the calibration standard. Low barium MS recovery; no flag since all other QC is acceptable. Low zinc spike recoveries; "N" flag.

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

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

WSCF
ANALYTICAL RESULTS REPORT

Attention: DL Stewart K6-96
SAF Number: I07-042
Sample # W07P000975
Client ID: B1N2L2 STEWART WSCF
Matrix: WATER

Group #: WSCF20070918
Department: Radiochemistry
Sampled: 05/30/07
Received: 05/30/07

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	-130	pCi/L	+-130	pCi/L	1.00	2.2e+02		06/07/07

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

B - The analyte < the RDL but > = the IDL/MDL (inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
C - The Analyte was found in the Associated Blank.(inorg)
N - Spike sample recovery is outside control limits.(inorg)

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20070918
Matrix: WATER
Test: Tritium by Liq Sct column prep

Sample Date: 05/24/07
Receive Date:05/24/07

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W07P000970											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tritium	10028-17-8	1.0E+03		RPD			9.524	20.000		06/07/07
MS	Tritium	10028-17-8	15020.0	87.442	% Recov	75.000	125.000				06/07/07
BATCH QC											
BLANK	Tritium	10028-17-8	U-8.9E+01	n/a	pCi/L	-10.000	1000.000				06/07/07
LCS	Tritium	10028-17-8	1910.0	93.867	% Recov	80.000	120.000				06/07/07

M4W41-SLF-07-431

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 3 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

07/12/07
td

ACKNOWLEDGMENT OF SAMPLES RECEIVED

GPAP

Richland, WA 99352
Attn: DL Stewart K6-96

Customer Code: PNNL-GPP
PO#: 122543
Group#: 20070918

The following samples were received from you on 05/30/07. 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
W07P000974	B1N2L1	STEWART @GPP6010	Water	05/30/0
W07P000975	B1N2L2	STEWART @H3-33 @IC-30	Water	05/30/0

Test Acronym Description

Test Acronym	Description
@GPP6010	ICP Metals Analysis, Grd H20 P
@H3-33	Tritium by Liq Sct column prep
@IC-30	Anions by Ion Chromatography

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

07/12/07 20070918

I07-042-4

Page 1 of 1

Collector D. P. Stewart	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. I07-042	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title 100NR2IAM-LOI, MAY 2007	Logbook: HNF-N-506-8	**Ice Chest No.** GW0-06-12 **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 ☐

All Labs except WSCF: Batch all samples submitted under A, G, I, S, and W 07 SAFs into one SDG, not to exceed SDG closure of 14 days.

WSCF: Batch all GW samples submitted into one SDG, daily closure.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1N2L1 (F) W07P000974		W	5/30/07	1121	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	HNO3 to pH <2
B1N2L2	975	W	↓	↓	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	Cool 4C
B1N2L2	↓	W	↓	↓	1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	None

L. Wall 5/30/07

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	DR.	[signature]	MAY 30 2007 1345	TA FRAZIER	[signature]		MAY 30 2007 1345
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