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FLUOR

Memorandum

M8141-SLF-05-111

To: S. J. Trent A0-21 Date: March 4, 2005

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

cc:

w/Attachments		w/o Attachments	
T. F. Dale	S3-30	D. J. Hart	S3-30
H. K. Meznarich	S3-30	M. A. Neely	S3-30
P. D. Mix	S3-30	H. S. Rich	S3-28
J. E. Trechter	S3-30	L. C. Swanson	E6-35
		File/LB	

Subject: FINAL RESULTS FOR U PLANT CLOSURE CONTAMINANT PLUME REFINEMENT–SAMPLE DELIVERY GROUP WSCF20050464 – SAF NUMBER F05-009

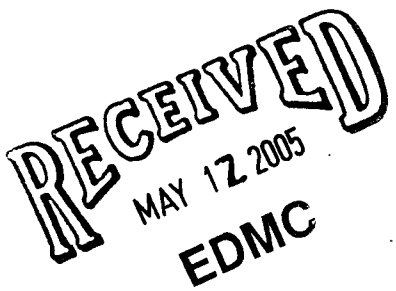
Reference: (1) Groundwater Protection Program-Letter of Instruction, FH-EIS-2003-MEM-001, October 31, 2002

(2) HNF-SD-CD-QAPP-017, Rev. 6, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains a narrative (Attachment 1) for sample delivery group WSCF20050464, the analytical results (Attachment 2), and the sample receipt information (Attachment 3).

SLF/grf

Attachments 3



M8141-SLF-05-111

ATTACHMENT 1

NARRATIVE

Consisting of 3 pages
Including cover page

Sample Delivery Group	**WSCF20050464**
Sample Matrix	**SOIL**
Sample Visual	**N/A**
SAF Number	**F05-009**
Data Deliverable	**Summary Report**

Introduction

Two (2) U Plant Closure Contaminant Plume Refinement, 216-U-1 & 216-U-2/C4713, 40' – 42', GRP samples (B1CD97 and B1CDB2) were received at the WSCF Laboratory on February 28, 2005. The 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 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) 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 forms are included as Attachment 3.

Analytical Methodology for Requested Analyses

Inorganic

- ICP-AES Metals by EPA Method 6010B. Analytical work was performed with no deviations to the approved method.
- ICP-MS Metals by EPA Method 200.8. Analytical work was performed with no deviations to the approved method.

Inorganic Comments

ICP-AES Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per GRP Letter of Instruction. See page 9 for QC details. Analytical Notes:

- Preparation Date: 02-mar-2005.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1CD96 (SDG# 20050458, SAF# F05-009).
- Magnesium - insufficient spike concentration. Sample B1CD96 concentration was greater than four times the spike concentration.

- Magnesium - The analyte detected in the associated preparation Blank sample was evaluated and there was no significant affect on the sample B1CD97 and B1CDB2 results.

All other QC controls are within the established limits.

ICP-MS Metals – The hold time for this analysis was met. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spiked Duplicate were analyzed with each delivery group per the GRP Letter of Instruction. See pages 10 through 13 for QC details. Analytical Notes:

- Preparation Date: 28-feb-2005.
- Matrix Spike and Matrix Spike Duplicate QC samples were analyzed on sample# B1CD96 (SDG# 20050458, SAF# F05-009).
- Silver, Barium, Cadmium, Cobalt, Copper, Mercury, Nickel, Lead, Thallium, Uranium and Zinc - the analytes detected in the associated preparation Blank sample were evaluated and there was no significant affect on the sample B1CD97 and B1CDB2 results.
- Cobalt, Mercury and Antimony – The Laboratory Control Sample recoveries exceeded established laboratory limits, but were within manufacturer's limits. Sample results were not flagged.

All other QC controls are within the established limits.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

Herlene S. Rich
WSCF Production Control

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

M8141-SLF-05-111

ATTACHMENT 2

ANALYTICAL RESULTS

Consisting of 13 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: S. Fitzgerald

Client Services: P.D. Mix 3/4/2005

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

Contract#: FH-EIS-2003-MEM-001
Report#: WSCF20050464
Report Date: 4-mar-2005
Report WGPP/ver. 1.1
Groundwater Remediation Program

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F05-009: F05-009

Group #: WSCF20050464

Sample #	Client ID			CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Inorganic															
W050000774	B1CD97	GRP	TRENT	7439-95-4	Magnesium	SOIL	LA-505-411		4.95e+03	mg/kg	98.02	1.9	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-32-6	Titanium	SOIL	LA-505-411		1.06e+03	mg/kg	98.02	0.098	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7439-96-5	Manganese	SOIL	LA-505-412		339	mg/kg	9.49	6.6	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-02-0	Nickel	SOIL	LA-505-412		10.6	mg/kg	9.49	0.20	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-22-4	Silver	SOIL	LA-505-412		0.103	mg/kg	9.49	9.5e-03	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-36-0	Antimony	SOIL	LA-505-412	U	< 6.78	mg/kg	9.49	6.8	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-39-3	Barium	SOIL	LA-505-412		76.0	mg/kg	9.49	0.87	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-43-9	Cadmium	SOIL	LA-505-412	U	< 0.0190	mg/kg	9.49	0.019	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-47-3	Chromium	SOIL	LA-505-412		10.3	mg/kg	9.49	3.2	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-48-4	Cobalt	SOIL	LA-505-412		7.34	mg/kg	9.49	0.18	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-50-8	Copper	SOIL	LA-505-412		13.7	mg/kg	9.49	0.61	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-62-2	Vanadium	SOIL	LA-505-412		44.8	mg/kg	9.49	0.28	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-66-6	Zinc	SOIL	LA-505-412		52.9	mg/kg	9.49	2.4	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7439-92-1	Lead	SOIL	LA-505-412		5.20	mg/kg	9.49	0.25	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7439-97-6	Mercury	SOIL	LA-505-412		2.25	mg/kg	9.49	9.5e-03	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-61-1	Uranium	SOIL	LA-505-412		2.56	mg/kg	9.49	0.15	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-38-2	Arsenic	SOIL	LA-505-412	U	< 2.28	mg/kg	9.49	2.3	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7782-49-2	Selenium	SOIL	LA-505-412	U	< 0.693	mg/kg	9.49	0.69	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-28-0	Thallium	SOIL	LA-505-412		0.934	mg/kg	9.49	0.019	03/02/05	02/25/05	02/28/05
W050000774	B1CD97	GRP	TRENT	7440-24-6	Strontium	SOIL	LA-505-412		34.6	mg/kg	9.49	0.95	03/02/05	02/25/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7439-95-4	Magnesium	SOIL	LA-505-411		5.21e+03	mg/kg	97.96	1.9	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-32-6	Titanium	SOIL	LA-505-411		1.28e+03	mg/kg	97.96	0.098	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7439-96-5	Manganese	SOIL	LA-505-412		380	mg/kg	9.46	6.6	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-02-0	Nickel	SOIL	LA-505-412		13.0	mg/kg	9.46	0.20	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-22-4	Silver	SOIL	LA-505-412		0.0512	mg/kg	9.46	9.5e-03	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-36-0	Antimony	SOIL	LA-505-412	U	< 6.75	mg/kg	9.46	6.8	03/02/05	02/28/05	02/28/05

MDL = Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.
RQ = Result Qualifier

DF = Dilution Factor

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

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: F05-009: F05-009

Group #: WSCF20050464

Sample #	Client ID			CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W050000775	B1CDB2	GRP	TRENT	7440-39-3	Barium	SOIL	LA-505-412		93.4	mg/kg	9.46	0.87	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-43-9	Cadmium	SOIL	LA-505-412		0.0346	mg/kg	9.46	0.019	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-47-3	Chromium	SOIL	LA-505-412		13.0	mg/kg	9.46	3.2	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-48-4	Cobalt	SOIL	LA-505-412		7.58	mg/kg	9.46	0.18	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-50-8	Copper	SOIL	LA-505-412		14.5	mg/kg	9.46	0.60	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-62-2	Vanadium	SOIL	LA-505-412		47.7	mg/kg	9.46	0.27	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-66-6	Zinc	SOIL	LA-505-412		54.6	mg/kg	9.46	2.4	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7439-92-1	Lead	SOIL	LA-505-412		4.56	mg/kg	9.46	0.25	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7439-97-6	Mercury	SOIL	LA-505-412		1.64	mg/kg	9.46	9.5e-03	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-61-1	Uranium	SOIL	LA-505-412		2.86	mg/kg	9.46	0.15	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-38-2	Arsenic	SOIL	LA-505-412		5.90	mg/kg	9.46	2.3	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7782-49-2	Selenium	SOIL	LA-505-412	U	< 0.691	mg/kg	9.46	0.69	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-28-0	Thallium	SOIL	LA-505-412		0.605	mg/kg	9.46	0.019	03/02/05	02/28/05	02/28/05
W050000775	B1CDB2	GRP	TRENT	7440-24-6	Strontium	SOIL	LA-505-412		34.8	mg/kg	9.46	0.95	03/02/05	02/28/05	02/28/05

MDL=Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.
RQ=Result Qualifier

DF=Dilution Factor

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

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20050464
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: F05-009
Sample Date: 02/24/05
Receive Date:02/24/05

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
Lab ID: W050000765									
BATCH QC ASSOCIATED WITH SAMPLE									
MS	Magnesium	7439-95-4	NA	n/a	% Recov	03/02/05	75.000	125.000	
MS	Titanium	7440-32-6	190	95.960	% Recov	03/02/05	75.000	125.000	
MSD	Magnesium	7439-95-4	NA	n/a	% Recov	03/02/05	75.000	125.000	
MSD	Titanium	7440-32-6	180	91.371	% Recov	03/02/05	75.000	125.000	
SPK-RPD	Magnesium	7439-95-4		n/a	RPD	03/02/05	0.000	20.000	
SPK-RPD	Titanium	7440-32-6	91.371	4.899	RPD	03/02/05	0.000	20.000	
BATCH QC									
BLANK	Magnesium	7439-95-4	2.8	2.800	ug/L	03/02/05			
BLANK	Titanium	7440-32-6	<1e-3	n/a	ug/L	03/02/05			U
LCS	Magnesium	7439-95-4	2450	109.375	% Recov	03/02/05	71.000	129.000	
LCS	Titanium	7440-32-6	262	84.516	% Recov	03/02/05	9.000	191.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20050464
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: F05-009
Sample Date: 02/24/05
Receive Date:02/24/05

Lab ID: W050000765
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MS	Silver	7440-22-4	372.7495	93.187	% Recov	03/02/05	70.000	130.000	
MS	Arsenic	7440-38-2	398.939	99.735	% Recov	03/02/05	70.000	130.000	
MS	Barium	7440-39-3	414.13	103.532	% Recov	03/02/05	70.000	130.000	
MS	Cadmium	7440-43-9	390.7023	97.676	% Recov	03/02/05	70.000	130.000	
MS	Cobalt	7440-48-4	386.849	96.712	% Recov	03/02/05	70.000	130.000	
MS	Chromium	7440-47-3	392.273	98.068	% Recov	03/02/05	70.000	130.000	
MS	Copper	7440-50-8	386.26	96.565	% Recov	03/02/05	70.000	130.000	
MS	Mercury	7439-97-6	19.8831	99.415	% Recov	03/02/05	70.000	130.000	
MS	Manganese	7439-96-5	472.5	118.125	% Recov	03/02/05	70.000	130.000	
MS	Nickel	7440-02-0	387.314	96.829	% Recov	03/02/05	70.000	130.000	
MS	Lead	7439-92-1	384.874	96.219	% Recov	03/02/05	70.000	130.000	
MS	Antimony	7440-36-0	416.8	104.200	% Recov	03/02/05	70.000	130.000	
MS	Selenium	7782-49-2	409	102.250	% Recov	03/02/05	70.000	130.000	
MS	Strontium	7440-24-6	391.52	97.880	% Recov	03/02/05	70.000	130.000	
MS	Thallium	7440-28-0	381.0616	95.265	% Recov	03/02/05	70.000	130.000	
MS	Uranium	7440-61-1	383.902	95.975	% Recov	03/02/05	70.000	130.000	
MS	Vanadium	7440-62-2	383.2	95.800	% Recov	03/02/05	70.000	130.000	
MS	Zinc	7440-66-6	382.23	95.558	% Recov	03/02/05	70.000	130.000	
MSD	Silver	7440-22-4	373.3495	93.337	% Recov	03/02/05	70.000	130.000	
MSD	Arsenic	7440-38-2	397.539	99.385	% Recov	03/02/05	70.000	130.000	
MSD	Barium	7440-39-3	410.93	102.733	% Recov	03/02/05	70.000	130.000	
MSD	Cadmium	7440-43-9	390.2023	97.551	% Recov	03/02/05	70.000	130.000	
MSD	Cobalt	7440-48-4	381.249	95.312	% Recov	03/02/05	70.000	130.000	
MSD	Chromium	7440-47-3	380.873	95.218	% Recov	03/02/05	70.000	130.000	
MSD	Copper	7440-50-8	375.66	93.915	% Recov	03/02/05	70.000	130.000	
MSD	Mercury	7439-97-6	20.0731	100.365	% Recov	03/02/05	70.000	130.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20050464
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: F05-009
Sample Date: 02/24/05
Receive Date:02/24/05

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Manganese	7439-96-5	444.2	111.050	% Recov	03/02/05	70.000	130.000	
MSD	Nickel	7440-02-0	379.414	94.853	% Recov	03/02/05	70.000	130.000	
MSD	Lead	7439-92-1	377.374	94.344	% Recov	03/02/05	70.000	130.000	
MSD	Antimony	7440-36-0	418.4	104.600	% Recov	03/02/05	70.000	130.000	
MSD	Selenium	7782-49-2	407.6	101.900	% Recov	03/02/05	70.000	130.000	
MSD	Strontium	7440-24-6	394.62	98.655	% Recov	03/02/05	70.000	130.000	
MSD	Thallium	7440-28-0	372.3616	93.090	% Recov	03/02/05	70.000	130.000	
MSD	Uranium	7440-61-1	374.602	93.650	% Recov	03/02/05	70.000	130.000	
MSD	Vanadium	7440-62-2	396.5	99.125	% Recov	03/02/05	70.000	130.000	
MSD	Zinc	7440-66-6	369.23	92.308	% Recov	03/02/05	70.000	130.000	
SPK-RPD	Silver	7440-22-4	93.337	0.161	RPD	03/02/05	0.000	20.000	
SPK-RPD	Arsenic	7440-38-2	99.385	0.352	RPD	03/02/05	0.000	20.000	
SPK-RPD	Barium	7440-39-3	102.733	0.775	RPD	03/02/05	0.000	20.000	
SPK-RPD	Cadmium	7440-43-9	97.551	0.128	RPD	03/02/05	0.000	20.000	
SPK-RPD	Cobalt	7440-48-4	95.312	1.458	RPD	03/02/05	0.000	20.000	
SPK-RPD	Chromium	7440-47-3	95.218	2.949	RPD	03/02/05	0.000	20.000	
SPK-RPD	Copper	7440-50-8	93.915	2.782	RPD	03/02/05	0.000	20.000	
SPK-RPD	Mercury	7439-97-6	100.365	0.951	RPD	03/02/05	0.000	20.000	
SPK-RPD	Manganese	7439-96-5	111.050	6.174	RPD	03/02/05	0.000	20.000	
SPK-RPD	Nickel	7440-02-0	94.853	2.062	RPD	03/02/05	0.000	20.000	
SPK-RPD	Lead	7439-92-1	94.344	1.968	RPD	03/02/05	0.000	20.000	
SPK-RPD	Antimony	7440-36-0	104.600	0.383	RPD	03/02/05	0.000	20.000	
SPK-RPD	Selenium	7782-49-2	101.900	0.343	RPD	03/02/05	0.000	20.000	
SPK-RPD	Strontium	7440-24-6	98.655	0.789	RPD	03/02/05	0.000	20.000	
SPK-RPD	Thallium	7440-28-0	93.090	2.309	RPD	03/02/05	0.000	20.000	
SPK-RPD	Uranium	7440-61-1	93.650	2.452	RPD	03/02/05	0.000	20.000	
SPK-RPD	Vanadium	7440-62-2	99.125	3.412	RPD	03/02/05	0.000	20.000	
SPK-RPD	Zinc	7440-66-6	92.308	3.460	RPD	03/02/05	0.000	20.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20050464
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: F05-009
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit		RQ
BATCH QC										
BLANK	Silver	7440-22-4	1.923e-2	0.019	ug/L	03/02/05				
BLANK	Arsenic	7440-38-2	<0.24	n/a	ug/L	03/02/05				U
BLANK	Barium	7440-39-3	0.1128	0.113	ug/L	03/02/05				
BLANK	Cadmium	7440-43-9	1.645e-2	0.016	ug/L	03/02/05				
BLANK	Cobalt	7440-48-4	2.702e-2	0.027	ug/L	03/02/05				
BLANK	Chromium	7440-47-3	<0.336	n/a	ug/L	03/02/05				U
BLANK	Copper	7440-50-8	0.2687	0.269	ug/L	03/02/05				
BLANK	Mercury	7439-97-6	0.2332	0.233	ug/L	03/02/05				
BLANK	Manganese	7439-96-5	<0.697	n/a	ug/L	03/02/05				U
BLANK	Nickel	7440-02-0	0.1727	0.173	ug/L	03/02/05				
BLANK	Lead	7439-92-1	4.803e-2	0.048	ug/L	03/02/05				
BLANK	Antimony	7440-36-0	<0.714	n/a	ug/L	03/02/05				U
BLANK	Selenium	7782-49-2	<7.3e-2	n/a	ug/L	03/02/05				U
BLANK	Strontium	7440-24-6	<0.1	n/a	ug/L	03/02/05				U
BLANK	Thallium	7440-28-0	2.5e-2	0.025	ug/L	03/02/05				
BLANK	Uranium	7440-61-1	3.578e-2	0.036	ug/L	03/02/05				
BLANK	Vanadium	7440-62-2	<2.9e-2	n/a	ug/L	03/02/05				U
BLANK	Zinc	7440-66-6	2.498	2.498	ug/L	03/02/05				
LCS	Silver	7440-22-4	156.5	120.385	% Recov	03/02/05	110.000	170.000		
LCS	Arsenic	7440-38-2	188.2	116.894	% Recov	03/02/05	82.000	142.000		
LCS	Barium	7440-39-3	279.5	110.913	% Recov	03/02/05	79.000	123.000		
LCS	Cadmium	7440-43-9	145.7	113.828	% Recov	03/02/05	88.000	127.000		
LCS	Cobalt	7440-48-4	40.09	113.892	% Recov	03/02/05	78.000	111.000	*	
LCS	Chromium	7440-47-3	81.34	117.036	% Recov	03/02/05	50.000	126.000		
LCS	Copper	7440-50-8	164.8	111.351	% Recov	03/02/05	61.000	134.000		
LCS	Mercury	7439-97-6	20.94	123.905	% Recov	03/02/05	75.000	114.000	*	
LCS	Manganese	7439-96-5	432.2	105.931	% Recov	03/02/05	79.000	114.000		
LCS	Nickel	7440-02-0	165.5	112.585	% Recov	03/02/05	84.000	125.000		

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: WSCF20050464
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: F05-009
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Lead	7439-92-1	157.3	110.775	% Recov	03/02/05	87.000	120.000	
LCS	Antimony	7440-36-0	126	206.897	% Recov	03/02/05	61.000	135.000	
LCS	Selenium	7782-49-2	77.58	120.841	% Recov	03/02/05	83.000	145.000	
LCS	Strontium	7440-24-6	91.93	109.440	% Recov	03/02/05	80.000	120.000	
LCS	Thallium	7440-28-0	91.37	108.774	% Recov	03/02/05	79.000	125.000	
LCS	Uranium	7440-61-1	396	99.000	% Recov	03/02/05	89.000	107.000	
LCS	Vanadium	7440-62-2	107.4	110.380	% Recov	03/02/05	77.000	111.000	
LCS	Zinc	7440-66-6	195	118.182	% Recov	03/02/05	76.000	148.000	

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F05-009

Group #: WSCF20050464

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-AES: The spiking level for Magnesium was insufficient for the sample content. Idl ICP-MS: Preparation blank units are in ppb (ug/L) and sample units are in ug/g (ppm). Co, Hg, and Sb LCS recoveries are within manufacturers specifications; no flags.

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

WSCF
TENTATIVELY IDENTIFIED PEAK REPORT

Attention:
Project Number :

Group #: 20050464

Sample #	Client ID	Test Name	Peak Name	CAS#	RT	RQ	Result	Units

RQ=Result Qualifier

WSCF
METHOD REFERENCES REPORT

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	
	EPA SW-846 6010B	INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION 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

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at \\ap006\aspdocs\WSCF\Sample Mgmt\ProcedureMethodCrossReference.pdf. This document includes on-line links to full-text versions of the procedures and methods, where available.

w13qlog v1 04-mar-2005 09:27:32

W13q Worklist/Batch/QC Report for Group# WSCF20050464

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
25245	9	25610	28962	BLANK		ICP-2008 MS All possible metal
25245	10	25610	28962	LCS		ICP-2008 MS All possible metal
25245	12	25610	28962	MS	W050000765	ICP-2008 MS All possible metal
25245	13	25610	28962	MSD	W050000765	ICP-2008 MS All possible metal
25245	0	25610	28962	SPK-RPD	W050000765	ICP-2008 MS All possible metal
25245	15	25610	28962	SAMPLE	W050000774	ICP-2008 MS All possible metal
25245	16	25610	28962	SAMPLE	W050000775	ICP-2008 MS All possible metal
25238	1	25599	28971	BLANK		ICP Metals Analysis, Grd H20 P
25238	2	25599	28971	LCS		ICP Metals Analysis, Grd H20 P
25238	9	25599	28971	MS	W050000765	ICP Metals Analysis, Grd H20 P
25238	10	25599	28971	MSD	W050000765	ICP Metals Analysis, Grd H20 P
25238	0	25599	28971	SPK-RPD	W050000765	ICP Metals Analysis, Grd H20 P
25238	11	25599	28971	SAMPLE	W050000774	ICP Metals Analysis, Grd H20 P
25238	12	25599	28971	SAMPLE	W050000775	ICP Metals Analysis, Grd H20 P

M8141-SLF-05-111

ATTACHMENT 3

SAMPLE RECEIPT INFORMATION

Consisting of 4 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
V1
3/8/05

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program

Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 119141/ES10
Group#: 20050464
Project#: F05-009
Proj Mgr: Steve Trent A0-21
Phone: 373-5869

The following samples were received from you on 02/28/05. 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
W050000774	B1CD97	GRP @2008 @GPP6010	TRENT Solid, or handle as if solid	02/25/05
W050000775	B1CDB2	GRP @2008 @GPP6010	TRENT Solid, or handle as if solid	02/28/05

Test Acronym Description

Test Acronym	Description
@2008	ICP-2008 MS All possible metal
@GPP6010	ICP Metals Analysis, Grd H20 P

2/28/05

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F05-009-006	PAGE 1 OF 1

COLLECTOR POPE/PFISTER/MOKLER/TYRA /HUGHES	**COMPANY CONTACT** JACKSON, RL	**TELEPHONE NO.** 372-9004	**PROJECT COORDINATOR** TRENT, SJ
SAMPLING LOCATION 216-U-1 & 216-U-2; C4718 ~~40-42'~~ 44'-46' RP 2/25/05	**PROJECT DESIGNATION** U Plant Closure Contaminant Plume Refinement		**SAF NO.** F05-009
ICE CHEST NO.	**FIELD LOGBOOK NO.** HNF-N-439 1	**COA** 119141ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A

PRICE CODE 8B — **DATA TURNAROUND**
AIR QUALITY ☐ 2/25/05 RP — 7 Days / ~~15 Days~~

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

POSSIBLE SAMPLE HAZARDS/ REMARKS

SPECIAL HANDLING AND/OR STORAGE
Z0050464

PRESERVATION	None
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	[redacted]
B1CD97 ... 50005774	SOIL	2-25-05	0940	X

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. PFISTER/[signature]	2/25/05 1505	MO-026 FRIG #1	2/25/05 1505
MO-026/Ref #1	2-28-05 0530	J-S POPE/[signature]	2-28-05 0530
[signature]	2-28-05 11:00	Victor Bing [signature]	2/28/05 11:00

SPECIAL INSTRUCTIONS
(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Selenium, Strontium, Thallium, Uranium} ICP/MS - 200.8 (Hg); ICP Metals - 6010B (TAL) {Magnesium} ICP Metals - 6010B (Add-On) {Titanium}

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

A-6003-618(03/03)

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F05-009-011	PAGE 1 OF 1
COLLECTOR POPE/PFISTER/MOKLER/TYRA	**COMPANY CONTACT** JACKSON, RL	**TELEPHONE NO.** 372-9004	**PROJECT COORDINATOR** TRENT, SJ	**PRICE CODE** 8B **DATA TURNAROUND** 7 Days / ~~15~~ Days
SAMPLING LOCATION 216-U-1 & 216-U-2; C4706 44'-46'	**PROJECT DESIGNATION** U Plant Closure Contaminant Plume Refinement		**SAF NO.** F05-009	**AIR QUALITY** ☐ RB 2/28/05
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**COA** 119141ES10	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE	
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A	

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

POSSIBLE SAMPLE HAZARDS/ REMARKS

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None
TYPE OF CONTAINER	aG
NO. OF CONTAINER(S)	1
VOLUME	60mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B1CDB2 ;305002075	SOIL	2-28-05	0930	X

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
R. PFISTER / [signature]	2/28/05 11:00	Victor Binis [signature]	2/28/05 11:00
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

(1)ICP/MS - 200.8 (TAL) {Antimony, Barium, Cadmium, Chromium, Cobalt, Copper, Manganese, Nickel, Silver, Vanadium, Zinc} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Selenium, Strontium, Thallium, Uranium} ICP/MS - 200.8 (Hg); ICP Metals - 6010B (TAL) {Magnesium} ICP Metals - 6010B (Add-On) {Titanium}

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

A-6003-618(03/03)