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Mission Support Alliance
P.O. Box 650
Richland, Washington 99352



M4W41-SLF-10-029

January 19, 2010

Mr. M. A. Neely, Manager
Analytical Services
CH2M HILL Plateau Remediation Contract
PO Box 1600 MSIN R3-60
Richland, WA 99352

Dear Mike,

FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20091270 – SAF NUMBER F10-057

- References: (1) Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, 'FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER'
- (2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following attachments for sample delivery group WSCF20091270:

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

Very truly yours,

S. L. Fitzgerald for SLF

S. L. Fitzgerald
WSCF Analytical Lab

SLF/grf

Attachments 4

cc: w/Attachments
R. L. Barker S3-30
H. K. Meznarich S3-30
J. E. Trechter S3-30
S. J. Trent R3-50
File/LB

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M4W41-SLF-10-029

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20091270
Data Deliverable Date: 14-dec-2009
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
F10-057	B23776	W09GR01128	OTHERLIQ
	B23777	W09GR01129	OTHERLIQ

M4W41-SLF-10-029

ATTACHMENT 2

NARRATIVE

Consisting of 6 pages
Including cover page

Introduction

Two (2) S&GRP samples were received at the WSCF Laboratory on December 7th, 2009. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. Also attached is IRF form 10-010 dealing with analysis changes and missed hold time. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

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

The following generic data qualifiers (i.e., B, D, and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wetchem analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report*, page 14, for a complete listing of approved analytical methods.

Inorganic Comments

ICP-MS Metals – The hold time requirements for this analysis were met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 18 through 21 for QC details. Analytical Note(s):

- Arsenic, Beryllium, Antimony, Selenium and Zinc - Matrix Spike and Matrix Spike Duplicate recoveries exceeded laboratory spike levels. Affected sample results in this batch were "N" flagged.
- Copper and vanadium contamination detected in the Blank was evaluated and affected sample results in this batch were "C" Flagged.

All other QC controls are within the established limits.

pH – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. See page 22 for QC details. Analytical Note(s):

All QC controls are within the established limits.

Organic Comments

Alcohol/Glycols - The hold time requirement for this analysis was not met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See page 26 for QC details. Analytical Note(s):

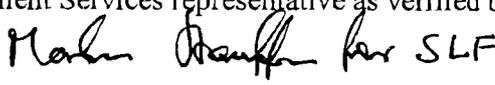
- The customer requested the Ethylene Glycol analysis to be changed to Propylene Glycol. Analysis was completed out of hold time.
- The RPD for 2-bromoethanol for the MSD was greater than 20%.
- Propylene glycol added to analysis and analyzed by GCFID.

All other QC controls are within the established limits.

Radiochemistry Comments

Canceled by Customer

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


Scot L. Fitzgerald
WSCF Analytical Laboratory Manager


Richard Barker
WSCF Client Services 4/19/10

From: Widrig, Dana L
Sent: Friday, January 15, 2010 11:56 AM
To: Fitzgerald, Scot L
Cc: Crisp, Bryan D; Neely, Michael
Subject: RE: 20091270

Scot,

These changes are approved. Please generate the IRF.

Thanks,

Dana

From: Fitzgerald, Scot L
Sent: Friday, January 15, 2010 11:48 AM
To: Widrig, Dana L
Subject: FW: 20091270

Dana,

Can you send us approval on these activities for inclusion in the IRF.

Scot Fitzgerald

mailto:Scot_L_Fitzgerald@RL.gov
Analytical Production Manager
MSA Analytical Services
RJ LeeGroup, Inc.
(509) 373-7495 Office
(509) 308-6485 Mobile



From: Barker, Richard L
Sent: Friday, January 15, 2010 11:20 AM
To: Fitzgerald, Scot L
Subject: 20091270

Scot,

Sample Group 20091270 with samples B23776 and B23777 on SAF F10-057 for a waste drum. The original request was for ICP-MS, Ethylene Glycol (later changed to Propylene Glycol?), Gamma Spec and Isotopic Uranium (the RAD Chem was apparently canceled for the final report to come up?).

Is there any documentation for the changes or do we need an IRF?

Richard Barker

M4W41-SLF-10-029

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 18 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for
Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: Markus Stauffer 1/19/10
Client Services: Richard Barker 1/19/10 Richard Barker

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.

Contract#: MOA-FH-CHPRC-2008
Report#: WSCF20091270
Report Date: 13-jan-2010
Report WGPP/ver. 5.2
Groundwater Remediation Program

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20091270

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
40341	4	40775	45330	LCS		pH Direct Measurement
40341	8	40775	45330	LCS		pH Direct Measurement
40341	5	40775	45330	SAMPLE	W09GR01128	pH Direct Measurement
40341	6	40775	45330	DUP	W09GR01129	pH Direct Measurement
40341	7	40775	45330	SAMPLE	W09GR01129	pH Direct Measurement
40343	16	40781	45449	BLANK		ICP-200.8 MS All possible meta
40343	17	40781	45449	LCS		ICP-200.8 MS All possible meta
40343	19	40781	45449	MS	W09GR01128	ICP-200.8 MS All possible meta
40343	20	40781	45449	MSD	W09GR01128	ICP-200.8 MS All possible meta
40343	18	40781	45449	SAMPLE	W09GR01128	ICP-200.8 MS All possible meta
40343	20	40781	45449	SPK-RPD	W09GR01128	ICP-200.8 MS All possible meta
40343	21	40781	45449	SAMPLE	W09GR01129	ICP-200.8 MS All possible meta

Department: Organic

W13q Worklist/Batch/QC Report for Group# WSCF20091270

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
				SAMPLE	W09GR01128	Propylene Glycol
				SAMPLE	W09GR01129	Propylene Glycol
40458	1	40898	45478	BLANK		Alcohols, Glycols - 8015
40458	2	40898	45478	LCS		Alcohols, Glycols - 8015
40458	4	40898	45478	DUP	W09GR01128	Alcohols, Glycols - 8015
40458	5	40898	45478	MS	W09GR01128	Alcohols, Glycols - 8015
40458	6	40898	45478	MSD	W09GR01128	Alcohols, Glycols - 8015
40458	3	40898	45478	SAMPLE	W09GR01128	Alcohols, Glycols - 8015
40458	6	40898	45478	SPK-RPD	W09GR01128	Alcohols, Glycols - 8015
40458	7	40898	45478	SAMPLE	W09GR01129	Alcohols, Glycols - 8015

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-212-402	Determination of pH Direct Measurement HEIS 150.1_PH	pH
LA-505-412	LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY	None No reference to any industry method.

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

Report Date: 13-jan-2010
Report#: WSCF20091270
Report WGPPM/5.2

WSCF METHOD REFERENCES REPORT

Department: Organic

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

Best Available	NOT APPLICABLE	No reference to any industry method.
Organics	Organics - Alcohols, Glycols EPA SW-846 8015B	Nonhalogenated Organics Using GC/FID

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

Report Date: 13-Jan-2010
Report#: WSCF20091270
Report WGPPM/5.2

WSCF ANALYTICAL RESULTS REPORT

Group #: WSCF20091270
Department: Inorganic
Sampled: 12/07/09
Received: 12/07/09

Matrix: OTHERLIQ
Client ID: TRENT
WSCF

Attention: Steve Trent
SAF Number: F10-057
Sample #: W09GR01128
Client ID: B23776

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP-200.8 MS All possible meta Prep											
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412		7.30	ug/L			10.00	1.00		12/13/09
Nickel	7440-02-0	LA-505-412		15.8	ug/L			10.00	2.00		12/13/09
Silver	7440-22-4	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
Antimony	7440-36-0	LA-505-412	N	142	ug/L			10.00	3.00		12/13/09
Barium	7440-39-3	LA-505-412	U	<	ug/L			10.00	2.00		12/13/09
Beryllium	7440-41-7	LA-505-412	NU	<	ug/L			10.00	0.500		12/13/09
Cadmium	7440-43-9	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
Chromium	7440-47-3	LA-505-412		13.4	ug/L			10.00	5.00		12/13/09
Cobalt	7440-48-4	LA-505-412	U	<	ug/L			10.00	0.500		12/13/09
Copper	7440-50-8	LA-505-412		197	ug/L			10.00	1.00		12/13/09
Vanadium	7440-62-2	LA-505-412	C	5.26	ug/L			10.00	2.00		12/13/09
Zinc	7440-66-6	LA-505-412	N	78.6	ug/L			10.00	8.00		12/13/09
Lead	7439-92-1	LA-505-412		8.31	ug/L			10.00	1.00		12/13/09
Mercury	7439-97-6	LA-505-412	U	<	ug/L			10.00	0.500		12/13/09
Arsenic	7440-38-2	LA-505-412	N	185	ug/L			10.00	4.00		12/13/09
Selenium	7782-49-2	LA-505-412	N	1.11e+03	ug/L			10.00	3.00		12/13/09
Thallium	7440-28-0	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
pH Measurement											
pH Measurement	PH	LA-212-402		9.35	unitless			1.00	0.010		12/07/09

MDL = Minimum Detection Limit C - The Analyte was found in the Associated Blank. (inorg)
RQ = Result Qualifier U - Analyzed for but not detected above limiting criteria (inorg)
TP Err = Total Propagated Error
DF = Dilution Factor

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

Report WGPP/ver. 5.2
Groundwater Remediation Program

WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-057
Sample # W09GR01129
Client ID: B23777

TRENT
WSCF

Matrix: OTHERLIQ

Group #: WSCF20091270
Department: Inorganic
Sampled: 12/07/09
Received: 12/07/09

Analysis Date
 12/11/09

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
ICP-200.8 MS All possible meta Prep											
ICP-200.8 MS All possible meta											
Manganese	7439-96-5	LA-505-412		7.34	ug/L			10.00	1.00		12/13/09
Nickel	7440-02-0	LA-505-412		16.2	ug/L			10.00	2.00		12/13/09
Silver	7440-22-4	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
Antimony	7440-36-0	LA-505-412	N	139	ug/L			10.00	3.00		12/13/09
Barium	7440-39-3	LA-505-412	U	<	ug/L			10.00	2.00		12/13/09
Beryllium	7440-41-7	LA-505-412	NU	<	ug/L			10.00	0.500		12/13/09
Cadmium	7440-43-9	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
Chromium	7440-47-3	LA-505-412		13.6	ug/L			10.00	5.00		12/13/09
Cobalt	7440-48-4	LA-505-412	U	<	ug/L			10.00	0.500		12/13/09
Copper	7440-50-8	LA-505-412		197	ug/L			10.00	1.00		12/13/09
Vanadium	7440-62-2	LA-505-412	C	5.87	ug/L			10.00	2.00		12/13/09
Zinc	7440-66-6	LA-505-412	N	88.4	ug/L			10.00	8.00		12/13/09
Lead	7439-92-1	LA-505-412		8.75	ug/L			10.00	1.00		12/13/09
Mercury	7439-97-6	LA-505-412	U	<	ug/L			10.00	0.500		12/13/09
Arsenic	7440-36-2	LA-505-412	N	183	ug/L			10.00	4.00		12/13/09
Selenium	7782-49-2	LA-505-412	N	471	ug/L			10.00	3.00		12/13/09
Thallium	7440-28-0	LA-505-412	U	<	ug/L			10.00	1.00		12/13/09
pH Measurement											
pH Measurement		LA-212-402		9.65	unitless			1.00	0.010		12/07/09

MDL = Minimum Detection Limit C - The Analyte was found in the Associated Blank (inorg) N - Spike sample recovery is outside control limits. (inorg)
RQ = Result Qualifier U - Analyzed for but not detected above limiting criteria (inorg) U - Analyzed for but not detected above limiting criteria. (org)
TP Err = Total Propagated Error
DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols
Report WGP/ver. 5.2
Groundwater Remediation Program

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20091270

Matrix: WATER

Test: ICP-200 8 MS All possible meta

Sample Date: 12/07/09

Receive Date: 12/07/09

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MS	Silver	7440-22-4	385.5	96.375	% Recov	70.000	130.000				12/13/09
MS	Arsenic	7440-38-2	1460.2	365.050	% Recov	70.000	130.000				12/13/09
MS	Barium	7440-39-3	391.3	97.825	% Recov	70.000	130.000				12/13/09
MS	Beryllium	7440-41-7	596.1	149.025	% Recov	70.000	130.000				12/13/09
MS	Cadmium	7440-43-9	441.7	110.425	% Recov	70.000	130.000				12/13/09
MS	Cobalt	7440-48-4	382.9	95.725	% Recov	70.000	130.000				12/13/09
MS	Chromium	7440-47-3	405.43	101.358	% Recov	70.000	130.000				12/13/09
MS	Copper	7440-50-8	409.7	102.425	% Recov	70.000	130.000				12/13/09
MS	Mercury	7439-97-6	21.49	107.450	% Recov	70.000	130.000				12/13/09
MS	Manganese	7439-96-5	447	111.750	% Recov	70.000	130.000				12/13/09
MS	Nickel	7440-02-0	398.81	99.703	% Recov	70.000	130.000				12/13/09
MS	Lead	7439-92-1	387.29	96.823	% Recov	70.000	130.000				12/13/09
MS	Antimony	7440-36-0	606.9	151.725	% Recov	70.000	130.000				12/13/09
MS	Selenium	7782-49-2	1432	358.000	% Recov	70.000	130.000				12/13/09
MS	Thallium	7440-28-0	380.7	95.175	% Recov	70.000	130.000				12/13/09
MS	Vanadium	7440-62-2	422.34	105.585	% Recov	70.000	130.000				12/13/09
MS	Zinc	7440-66-6	520.18	130.045	% Recov	70.000	130.000				12/13/09
MSD	Silver	7440-22-4	345.5	86.375	% Recov	70.000	130.000				12/13/09
MSD	Arsenic	7440-38-2	1333.2	333.300	% Recov	70.000	130.000				12/13/09
MSD	Barium	7440-39-3	358.4	89.600	% Recov	70.000	130.000				12/13/09
MSD	Beryllium	7440-41-7	525.8	131.450	% Recov	70.000	130.000				12/13/09
MSD	Cadmium	7440-43-9	402.7	100.675	% Recov	70.000	130.000				12/13/09
MSD	Cobalt	7440-48-4	350.2	87.550	% Recov	70.000	130.000				12/13/09
MSD	Chromium	7440-47-3	367.93	91.983	% Recov	70.000	130.000				12/13/09
MSD	Copper	7440-50-8	368.8	92.200	% Recov	70.000	130.000				12/13/09
MSD	Mercury	7439-97-6	20.23	101.150	% Recov	70.000	130.000				12/13/09

Lab ID: W09GR01128
 BATCH QC ASSOCIATED WITH SAMPLE

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20091270

Matrix: WATER

Test: ICP-200.8 MS All possible meta

Sample Date: 12/07/09

Receive Date: 12/07/09

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Manganese	7439-96-5	403.5	100.875	% Recov	70.000	130.000				12/13/09
MSD	Nickel	7440-02-0	362.41	90.603	% Recov	70.000	130.000				12/13/09
MSD	Lead	7439-92-1	350.89	87.722	% Recov	70.000	130.000				12/13/09
MSD	Antimony	7440-36-0	525.7	131.425	% Recov	70.000	130.000				12/13/09
MSD	Selenium	7782-49-2	990	247.500	% Recov	70.000	130.000				12/13/09
MSD	Thallium	7440-28-0	350.3	87.575	% Recov	70.000	130.000				12/13/09
MSD	Vanadium	7440-62-2	382.74	95.685	% Recov	70.000	130.000				12/13/09
MSD	Zinc	7440-66-6	464.88	116.220	% Recov	70.000	130.000				12/13/09
SPK-RPD	Silver	7440-22-4	86.375		RPD			10.944	20.000		12/13/09
SPK-RPD	Arsenic	7440-38-2	333.300		RPD			9.093	20.000		12/13/09
SPK-RPD	Barium	7440-39-3	89.600		RPD			8.777	20.000		12/13/09
SPK-RPD	Beryllium	7440-41-7	131.450		RPD			12.532	20.000		12/13/09
SPK-RPD	Cadmium	7440-43-9	100.675		RPD			9.237	20.000		12/13/09
SPK-RPD	Cobalt	7440-48-4	87.550		RPD			8.921	20.000		12/13/09
SPK-RPD	Chromium	7440-47-3	91.983		RPD			9.698	20.000		12/13/09
SPK-RPD	Copper	7440-50-8	92.200		RPD			10.507	20.000		12/13/09
SPK-RPD	Mercury	7439-97-6	101.150		RPD			6.040	20.000		12/13/09
SPK-RPD	Manganese	7439-96-5	100.875		RPD			10.229	20.000		12/13/09
SPK-RPD	Nickel	7440-02-0	90.603		RPD			9.564	20.000		12/13/09
SPK-RPD	Lead	7439-92-1	87.722		RPD			9.863	20.000		12/13/09
SPK-RPD	Antimony	7440-36-0	131.425		RPD			14.339	20.000		12/13/09
SPK-RPD	Selenium	7782-49-2	247.500		RPD			36.499	20.000 *		12/13/09
SPK-RPD	Thallium	7440-28-0	87.575		RPD			8.317	20.000		12/13/09
SPK-RPD	Vanadium	7440-62-2	95.685		RPD			9.838	20.000		12/13/09
SPK-RPD	Zinc	7440-66-6	116.220		RPD			11.228	20.000		12/13/09

BATCH QC

BLANK	Silver	7440-22-4	<0.1	n/a	ug/L						U	12/13/09
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L						U	12/13/09
BLANK	Barium	7440-39-3	<0.2	n/a	ug/L						U	12/13/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20091270

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
BLANK	Beryllium	7440-41-7	<5e-2	n/a	ug/L					U	12/13/09
BLANK	Cadmium	7440-43-9	<0.1	n/a	ug/L					U	12/13/09
BLANK	Cobalt	7440-48-4	<5e-2	n/a	ug/L					U	12/13/09
BLANK	Chromium	7440-47-3	<0.5	n/a	ug/L					U	12/13/09
BLANK	Copper	7440-50-8	0.14	0.140	ug/L					U	12/13/09
BLANK	Mercury	7439-97-6	<5e-2	n/a	ug/L					U	12/13/09
BLANK	Manganese	7439-96-5	<0.1	n/a	ug/L					U	12/13/09
BLANK	Nickel	7440-02-0	<0.2	n/a	ug/L					U	12/13/09
BLANK	Lead	7439-92-1	<0.1	n/a	ug/L					U	12/13/09
BLANK	Antimony	7440-36-0	<0.3	n/a	ug/L					U	12/13/09
BLANK	Selenium	7782-49-2	<0.3	n/a	ug/L					U	12/13/09
BLANK	Thallium	7440-28-0	<0.1	n/a	ug/L					U	12/13/09
BLANK	Vanadium	7440-62-2	0.49	0.490	ug/L					U	12/13/09
BLANK	Zinc	7440-66-6	<0.8	n/a	ug/L					U	12/13/09
LCS	Silver	7440-22-4	41.82	104.550	% Recov	85.000	115.000				12/13/09
LCS	Arsenic	7440-38-2	42.16	105.400	% Recov	85.000	115.000				12/13/09
LCS	Barium	7440-39-3	42.71	106.775	% Recov	85.000	115.000				12/13/09
LCS	Beryllium	7440-41-7	45.12	112.800	% Recov	85.000	115.000				12/13/09
LCS	Cadmium	7440-43-9	41.84	104.600	% Recov	85.000	115.000				12/13/09
LCS	Cobalt	7440-48-4	41.68	104.200	% Recov	85.000	115.000				12/13/09
LCS	Chromium	7440-47-3	43.15	107.875	% Recov	85.000	115.000				12/13/09
LCS	Copper	7440-50-8	42.79	106.975	% Recov	85.000	115.000				12/13/09
LCS	Mercury	7439-97-6	2.25	112.500	% Recov	85.000	115.000				12/13/09
LCS	Manganese	7439-96-5	43.27	108.175	% Recov	85.000	115.000				12/13/09
LCS	Nickel	7440-02-0	41.98	104.950	% Recov	85.000	115.000				12/13/09
LCS	Lead	7439-92-1	43.45	108.625	% Recov	85.000	115.000				12/13/09
LCS	Antimony	7440-36-0	39.67	99.175	% Recov	85.000	115.000				12/13/09
LCS	Selenium	7782-49-2	41.55	103.875	% Recov	85.000	115.000				12/13/09
LCS	Thallium	7440-28-0	42.45	106.125	% Recov	85.000	115.000				12/13/09
LCS	Vanadium	7440-62-2	43.11	107.775	% Recov	85.000	115.000				12/13/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Inorganic**

SDG Number: WSCF20091270

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
LCS	Zinc	7440-66-6	41.39	103.475	% Recov	85.000	115.000				12/13/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20091270
 Matrix: WATER
 Test: pH Direct Measurement

Sample Date: 12/07/09
 Receive Date: 12/07/09

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD (%)	RPD Limit	RQ	Analysis Date
Lab ID: W09GR01129 BATCH QC ASSOCIATED WITH SAMPLE											
DUP	pH Direct Measurement		9.71		RPD			0.620	20.000		12/07/09
BATCH QC											
LCS	pH Direct Measurement		7.99	0.999	Ratio	0.900	1.100				12/07/09
LCS	pH Direct Measurement		8.02	1.002	Ratio	0.900	1.100				12/07/09

WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-057
Group #: WSCF20091270
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Antimony, Zinc, Arsenic, Selenium, Beryllium spike recoveries above 130% "N" flags Copper and vanadium prep blank above the MDL. "C" flags on Vanadium. Copper sample result more than 20X blank conc. 8015: SPK-RPD of surrogate high at 27%. (90.9/119.) of no consequence. Sample data is good. gar

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

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-057
Sample #: W09GR01128
Client ID: B23776
 TRENT
 WSCF

Group #: WSCF20091270
Department: Organic
Sampled: 12/07/09
Received: 12/07/09

Matrix: OTHERLIQ

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Alcohols, Glycols - 8015 Prep											01/04/10
Alcohols, Glycols - 8015											
Ethylene glycol	107-21-1	Organics	U	< 5.00e+03	ug/L			1.00	5.0e+03		01/04/10
Propylene Glycol		Best Availab		6.23e+05	ug/L			1.00	5.0e+03		01/04/10

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

C - The Analyte was found in the Associated Blank (inorg)
 U - Analyzed for but not detected above limiting criteria(inorg)

N - Spike sample recovery is outside control limits. (inorg)
 U - Analyzed for but not detected above limiting criteria. (org)

* - Indicates results that have NOT been validated;
 + - Indicates more than six qualifier symbols
Report WGPP/ver. 5.2
Groundwater Remediation Program

WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent **Group #:** WSCF20091270
SAF Number: F10-057 **Department:** Organic
Sample #: W09GR01129 **Sampled:** 12/07/09
Client ID: B23777 **Matrix:** OTHERLIQ **Received:** 12/07/09
TRENT **Analysis Date:** 01/04/10
WSCF

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Alcohols, Glycols - 8015 Prep											01/04/10
Alcohols, Glycols - 8015											
Ethylene glycol	107-21-1	Organics	U	< 5.00e+03	ug/L			1.00	5.0e+03		01/04/10
Propylene Glycol		Best Availab		6.50e+05	ug/L			1.00	5.0e+03		01/04/10

MDL = Minimum Detection Limit C - The Analyte was found in the Associated Blank.(inorg)
RQ = Result Qualifier U - Analyzed for but not detected above limiting criteria.(inorg)
TP Err = Total Propagated Error N - Spike sample recovery is outside control limits.(inorg)
DF = Dilution Factor U - Analyzed for but not detected above limiting criteria.(org)

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols
 Report WGPP/ver. 5.2
 Groundwater Remediation Program

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20091270
 Matrix: WATER
 Test: Alcohols, Glycols - 8015

Sample Date: 12/07/09
 Receive Date: 12/07/09

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date	
Lab ID: W09GR01128												
BATCH QC ASSOCIATED WITH SAMPLE												
DUP	2-Bromoethanol	540-51-2	21000		RPD			17.617	25.000		01/04/10	
DUP	Ethylene glycol	107-21-1	<5000		RPD			n/a	25.000	U	01/04/10	
MS	2-Bromoethanol	540-51-2	16000	90.909	% Recov	70.000	125.000				01/04/10	
MS	Ethylene glycol	107-21-1	10800	98.182	% Recov	75.000	125.000				01/04/10	
MSD	2-Bromoethanol	540-51-2	21000	119.318	% Recov	70.000	125.000				01/04/10	
MSD	Ethylene glycol	107-21-1	13000	118.182	% Recov	75.000	125.000				01/04/10	
SPK-RPD	2-Bromoethanol	540-51-2	119.318		RPD			27.027	20.000 *		01/04/10	
SPK-RPD	Ethylene glycol	107-21-1	118.182		RPD			18.487	20.000		01/04/10	
BATCH QC												
BLANK	2-Bromoethanol	540-51-2	20000	113.636	% Recov	75.000	125.000				01/04/10	
BLANK	Ethylene glycol	107-21-1	<5000	n/a	ug/L	0.000	5.000			U	01/04/10	
LCS	2-Bromoethanol	540-51-2	21000	119.318	% Recov	70.000	130.000				01/04/10	
LCS	Ethylene glycol	107-21-1	8200	74.545	% Recov	70.000	130.000				01/04/10	

WSCF ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-057

Group #: WSCF20091270
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
VALGROUP				
W09GR01128	B23776	TRENT	TESTDATA	ICP-MS: Antimony, Zinc, Arsenic, Selenium, Beryllium spike recoveries above 130% "N" flags Copper and vanadium prep blank above the MDL. "C" flags on Vanadium. Copper sample result more than 20X blank conc.
W09GR01129	B23777	TRENT	TESTDATA	
8015: SPK-RPD of surrogate high at 27%. (90.9/119.) of no consequence. Sample data is good. gar				
Propylene glycol concentration determined by GC/FID.				
Propylene glycol concentration determined by GC/FID.				

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

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M4W41-SLF-10-029

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 6 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

12/14/09
File 10A

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program

Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 401587/ES20
Group#: 20091270
Project#: F10-057
Proj Mgr: Steve Trent
Phone: 373-5869

The following samples were received from you on 12/07/09. 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
W09GR01128	B23776	TRENT @2008	Water @8015GPP PH-30	12/07/09
W09GR01129	B23777	TRENT @2008	Water @8015GPP PH-30	12/07/09

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@8015GPP	Alcohols, Glycols - 8015
PH-30	pH Direct Measurement

CH2M Hill Plateau Remediation Company
 COLLECTOR **KC Patterson**
 CHPRC

COMPANY CONTACT: WIDRIG, DL 376-2858
 PROJECT COORDINATOR: WIDRIG, DL
 PROJECT DESIGNATION: ARBA Upper ALE Waste Drum - Other Liquids
 FIELD LOGBOOK NO. **HNF-N-507-7**
 ACTUAL SAMPLE DEPTH: **N/A**

ICE CHEST NO. **N/A**
 WASTE DRUM 1
 OFFSITE PROPERTY NO. **N/A**
 BILL OF LADING/AIR BILL NO. **N/A**

SHIPPED TO: Waste Sampling & Characterization
 PRESERVATION: **Coon-4C**
 TYPE OF CONTAINER: **Gs***
 NO. OF CONTAINER(S): **3**
 VOLUME: **40ml**

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)
 SPECIAL HANDLING AND/OR STORAGE: **20091270**

SAMPLE NO.	MATRIX*	OTHER LIQUID	SAMPLE DATE	SAMPLE TIME
B23776	W07604128	OTHER LIQUID	DEC 07 2009	0930

CHAIN OF POSSESSION
 RELINQUISHED BY/REMOVED FROM: **KC Patterson**
 DATE/TIME: **DEC 07 2009 / 1135**
 RECEIVED BY/STORED IN: **MD/Kessler**
 DATE/TIME: **DEC 07 2009 / 1135**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson	DEC 07 2009 / 1135	MD/Kessler	DEC 07 2009 / 1135

LABORATORY SECTION: **30 of 33**
 RECEIVED BY: **MD/Kessler**
 DATE/TIME: **DEC 07 2009 / 1135**
 DISPOSAL METHOD: **33**

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F10-057-001	PAGE 2 OF 2
COLLECTOR	KC Patterson CHPRC	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE
SAMPLING LOCATION		PROJECT DESIGNATION		SAF NO.	AIR QUALITY
WASTE DRUM 1		ARRA Upper ALE Waste Drum - Other Liquids		F10-057	<input type="checkbox"/>
ICE CHEST NO.		FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
N/A		HNF-N-507-7	N/A	302228ES10	GOVERNMENT VEHICLE
SHIPPED TO		OFFSITE PROPERTY NO.		BILL OF LADING/AIR BILL NO.	
Waste Sampling & Characterization		N/A		N/A	

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF is 401587ES20.

** WSCF shall report preliminary ICP results within 3 days of sample receipt. If further metals analysis is needed, WSCF shall contact the S&GRP Project Coordinator for agreement on how to proceed and results shall be reported within 7 days of sample receipt.

** WSCF shall report preliminary radiochemical screening results within 24 hours of sample receipt. After the initial 24 hour screening results are reported, WSCF shall contact the S&GRP Project Coordinator for further agreement on how to proceed with the remaining Radiochemical analyses. Further analyses shall be performed and reported within 7 days after the reporting of initial screening results.

- (1) Alcohols, Glycols, & Ketones - 8015 (Ethylene glycol)
- (2) ICP/MS - 200.8 (TAL) (Chromium, Cobalt, Antimony, Barium, Copper, Cadmium, Zinc, Vanadium, Manganese, Nickel, Silver) ICP/MS - 200.8 (Add-on) (Arsenic, Lead, Thallium, Beryllium, Selenium) 200.8_HG - ICPMS (Mercury)
- (3) Gamma Spectroscopy (Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60)
- (4) Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)

 ORIGINAL

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		PAGE 2 OF 2	
COLLECTOR KC Patterson CHPRC	COMPANY CONTACT WIDRIG, DL	TELEPHONE NO. 376-2858	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 9A	DATA TURNAROUND 3 Days / 15 Days
SAMPLING LOCATION WASTE DRUM 1 DUP	PROJECT DESIGNATION ARRA Upper ALE Waste Drum - Other Liquids		SAF NO. F10-057	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. N/A	FIELD LOGBOOK NO. HNF-N-507-7	ACTUAL SAMPLE DEPTH N/A	COA 302228ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	
SHIPPED TO Waste Sampling & Characterization	OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. N/A		

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF is 401587ES20.

** WSCF shall report preliminary ICP results within 3 days of sample receipt. If further metals analysis is needed, WSCF shall contact the S&GRP Project Coordinator for agreement on how to proceed and results shall be reported within 7 days of sample receipt.

** WSCF shall report preliminary radiochemical screening results within 24 hours of sample receipt. After the initial 24 hour screening results are reported, WSCF shall contact the S&GRP Project Coordinator for further agreement on how to proceed with the remaining Radiochemical analyses. Further analyses shall be performed and reported within 7 days after the reporting of initial screening results.

- (1)Alcohols, Glycols, & Ketones - 8015 (Ethylene glycol)
- (2)ICP/MS - 200.8 (TAL) (Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver) ICP/MS - 200.8 (Add-on) (Arsenic, Lead, Thallium, Beryllium, Selenium) 200.8_HG - ICP/MS (Mercury)
- (3)Gamma Spectroscopy (Europium-155, Cesium-137, Europium-154, Europium-152, Cobalt-60)
- (4)Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)

 ORIGINAL