RECEIVED JUNE 03, 2010 REVISION 1

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

42100-SLF-10-222

June 3, 2010

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

Dear Mike,

P&D AND RESUBMITTAL FOR SAMPLE DELIVERY GROUP WSCF20100371 – SAF NUMBER F10-060

References: (1) Letter, SL Fitzgerald (RJLG) to MA Neely (CHPRC), Final Results for SDG WSCF20100371 (42100-SLF-10-094), dated March 29, 2010

(2) Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, 'FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER'

(3) HNF-SD-CD-QAPP-017, current version, Waste Sampling & Characterization Facility Quality Assurance Plan

On March 31, 2010, the subject P&D was received by the WSCF Laboratory. This letter replaces Reference 1 in its entirety together with the P&D data for sample delivery group WSCF20100371.

Please accept our apology for any inconvenience this may have created. If you have any questions, don't hesitate to call on Marisol Avila, telephone 373-1613, for assistance.

Very truly yours,

S. L. Fitzgerald
WSCF Analytical Lab

SLF/grf

Attachments 4

cc: w/Attachments

M. Avila	S3-30
H. K. Meznarich	S3-30
J. E. Trechter	S3-30
S. J. Trent	R3-50
File/LB	

M4W41-SLF-10-222

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

REVISION 1

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20100371
Data Deliverable Date: 30-mar-2010
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
F10-060	B240J5	W10GR00736	SOIL
	B240J7	W10GR00737	SOIL

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ATTACHMENT 2

NARRATIVE & P&D

Consisting of 6 pages
Including cover page

P&D Correction – Case Narrative Replaces the Prior Submittal in its Entirety

Introduction

Two (2) S&GRP samples were received at the WSCF Laboratory on March 15, 2010. 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. 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. Additionally, a copy of the completed P&D # WSCF20100371 is included with this case narrative.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

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.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* pages 14 through 15, for a complete listing of approved analytical methods.

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 20 through 21 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00700 (B243R6 in work order 20100365)
    - Matrix Spikes have low recoveries for all anions except Sulfate. This is likely due to the matrix effects imparted by the sample.

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. See page 22 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00736 (B240J5 in work order 20100371)

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. See pages 23 through 25 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00736 (B240J5 in work order 20100371)
    - Sodium – Matrix Spike and Matrix Spike Duplicate recoveries exceeded laboratory spike levels. Affected sample results in this batch were N flagged.
    - Estimated Boron results due to Iron Interference. Sample results are "E" flagged.
    - Calcium, Magnesium, Iron and Titanium – exceeded spiking levels by a factor of 4. Spike recoveries are not valid.
- Batch QC analyzed on sample# W10GR00758 and W10GR00862 are not associated with this sample group. Current software does not allow for easy removal of this information from the report. Please ignore.

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. See pages 26 through 29 for QC details. Analytical Note(s):

- Batch QC analyzed on sample# W10GR00736 (B240J5 in work order 20100371)
    - Aluminum – exceeded spiking levels by a factor of 4. Spike recoveries are not valid.
    - Strontium - contamination was detected in the Blank and was evaluated. No sample results in this batch were affected.

- Thallium – Matrix Spike and Matrix Spike Duplicate recoveries are low. Sample results are "N" flagged.

All other QC controls are within the established limits.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike (Matrix Spikes apply only to Technetium), Blank and Laboratory Control Sample were analyzed with this delivery group. See pages 34 through 39 for QC details. Analytical Note(s):

- Tracers are used to determine chemical yield. RPD is monitored in sample duplicate and is not required for tracer recovery per SOW.
- Rad Chem requested to be performed included: Americium-241 by AEA, Gamma Energy Analysis, Plutonium Isotopic and Uranium Isotopic by AEA, Strontium-89/90, and Technetium-99 by LCS.
- Americium-241: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)
  - Americium-241 - Blank results are less than 2 times the MDC. No flags issued.
  - Americium-241 - Duplicate is flagged due to heterogeneous nature of the sample.
- Gamma Energy Analysis: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)
- Isotopic Plutonium analysis: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)
  - Plutonium-239 - Duplicate is flagged due to heterogeneous nature of the sample.
- Isotopic Uranium analysis: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)
  - Uranium-234 - Blank results are less than 2 times the MDC. No flags issued.
  - Uranium-234 and Uranium-238 – Duplicate is flagged due to heterogeneous nature of the sample.
- Strontium-89/90: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)
- Technetium-99: Batch QC analyzed on sample# W10GR00699 (B243R5 in work order 20100365)

All other QC controls are within the established limits.

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

Marisol Aliva
WSCF Client Services

3/31/2010

Problem and Discrepancy Report
WSCF
SDG WSCF20100371

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1. The data package has the following issues:

a) SAF Number Cross Reference and Acknowledgement of Samples Received – Reference to SAF# F10-60 is not correct. SAF# should be F10-060.

Resolution: *Provide correction.*

Lab Response: **SAF number corrected to F10-060 on Cross Reference and Acknowledgement of Samples Received.**

Please correct the issues and resubmit the hard copy and electronic package.

M4W41-SLF-10-222

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 33 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: S. Fitzgerald 6/3/10

Client Services: Marisol Avila Marisol Avila 06/03/10

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

Contract#: M0A-FH-CHPRC-2008
Report#: WSCF20100371
Report Date: 19-may-2010
Report WGPP/ver. 5.2
Groundwater Remediation Program

REVISION 1

w13qlog v4.2 19-may-2010 12:15:46

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20100371

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
40798	1	41255	45820	BLANK		ICP-200.8 MS All possible meta
40798	2	41255	45820	LCS		ICP-200.8 MS All possible meta
40798	4	41255	45820	MS	W10GR00736	ICP-200.8 MS All possible meta
40798	5	41255	45820	MSD	W10GR00736	ICP-200.8 MS All possible meta
40798	3	41255	45820	SAMPLE	W10GR00736	ICP-200.8 MS All possible meta
40798	5	41255	45820	SPK-RPD	W10GR00736	ICP-200.8 MS All possible meta
40798	6	41255	45820	SAMPLE	W10GR00737	ICP-200.8 MS All possible meta
40805	2	41265	45823	BLANK		Anions by Ion Chromatography
40805	13	41265	45823	BLANK		Anions by Ion Chromatography
40805	3	41265	45823	LCS		Anions by Ion Chromatography
40805	5	41265	45823	DUP	W10GR00700	Anions by Ion Chromatography
40805	6	41265	45823	MS	W10GR00700	Anions by Ion Chromatography
40805	7	41265	45823	MSD	W10GR00700	Anions by Ion Chromatography
40805	7	41265	45823	SPK-RPD	W10GR00700	Anions by Ion Chromatography
40805	11	41265	45823	SAMPLE	W10GR00736	Anions by Ion Chromatography
40805	12	41265	45823	SAMPLE	W10GR00737	Anions by Ion Chromatography
40797	1	41254	45827	BLANK		ICP Metals Analysis, Grd H20 P
40797	2	41254	45827	LCS		ICP Metals Analysis, Grd H20 P
40797	4	41254	45827	MS	W10GR00736	ICP Metals Analysis, Grd H20 P
40797	5	41254	45827	MSD	W10GR00736	ICP Metals Analysis, Grd H20 P
40797	3	41254	45827	SAMPLE	W10GR00736	ICP Metals Analysis, Grd H20 P
40797	5	41254	45827	SPK-RPD	W10GR00736	ICP Metals Analysis, Grd H20 P
40797	6	41254	45827	SAMPLE	W10GR00737	ICP Metals Analysis, Grd H20 P
40797	8	41254	45827	MS	W10GR00758	ICP Metals Analysis, Grd H20 P
40797	9	41254	45827	MSD	W10GR00758	ICP Metals Analysis, Grd H20 P
40797	9	41254	45827	SPK-RPD	W10GR00758	ICP Metals Analysis, Grd H20 P
40797	20	41254	45827	MS	W10GR00862	ICP Metals Analysis, Grd H20 P
40797	21	41254	45827	MSD	W10GR00862	ICP Metals Analysis, Grd H20 P
40797	21	41254	45827	SPK-RPD	W10GR00862	ICP Metals Analysis, Grd H20 P
40816	1	41276	45839	BLANK		Cyanide by Midi/Spectrophotom
40816	2	41276	45839	LCS		Cyanide by Midi/Spectrophotom
40816	4	41276	45839	MS	W10GR00736	Cyanide by Midi/Spectrophotom
40816	5	41276	45839	MSD	W10GR00736	Cyanide by Midi/Spectrophotom
40816	3	41276	45839	SAMPLE	W10GR00736	Cyanide by Midi/Spectrophotom
40816	5	41276	45839	SPK-RPD	W10GR00736	Cyanide by Midi/Spectrophotom
40816	6	41276	45839	SAMPLE	W10GR00737	Cyanide by Midi/Spectrophotom

w13qlog v4.2 19-may-2010 12:15:46

Department: Radiochemistry

W13q Worklist/Batch/QC Report for Group# WSCF20100371

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
40779	1	41235	45806	BLANK		Gamma Energy Analysis-grd H2O
40779	2	41235	45806	LCS		Gamma Energy Analysis-grd H2O
40779	3	41235	45806	DUP	W10GR00699	Gamma Energy Analysis-grd H2O
40779	8	41235	45806	SAMPLE	W10GR00736	Gamma Energy Analysis-grd H2O
40779	9	41235	45806	SAMPLE	W10GR00737	Gamma Energy Analysis-grd H2O
40799	1	41258	45812	BLANK		TC99 by Liquid Scin.
40799	4	41258	45812	LCS		TC99 by Liquid Scin.
40799	3	41258	45812	DUP	W10GR00699	TC99 by Liquid Scin.
40799	2	41258	45812	MS	W10GR00699	TC99 by Liquid Scin.
40799	9	41258	45812	SAMPLE	W10GR00736	TC99 by Liquid Scin.
40799	10	41258	45812	SAMPLE	W10GR00737	TC99 by Liquid Scin.
40817	1	41277	45847	BLANK		Uranium Isotopics by AEA
40817	2	41277	45847	LCS		Uranium Isotopics by AEA
40817	3	41277	45847	DUP	W10GR00699	Uranium Isotopics by AEA
40817	12	41277	45847	SAMPLE	W10GR00736	Uranium Isotopics by AEA
40817	13	41277	45847	SURR	W10GR00736	Uranium Isotopics by AEA
40817	14	41277	45847	SAMPLE	W10GR00737	Uranium Isotopics by AEA
40817	15	41277	45847	SURR	W10GR00737	Uranium Isotopics by AEA
40813	1	41273	45849	BLANK		Strontium 89/90
40813	2	41273	45849	LCS		Strontium 89/90
40813	3	41273	45849	DUP	W10GR00699	Strontium 89/90
40813	12	41273	45849	SAMPLE	W10GR00736	Strontium 89/90
40813	13	41273	45849	SURR	W10GR00736	Strontium 89/90
40813	14	41273	45849	SAMPLE	W10GR00737	Strontium 89/90
40813	15	41273	45849	SURR	W10GR00737	Strontium 89/90
40818	1	41278	45850	BLANK		Plutonium Isotopics by AEA
40818	2	41278	45850	LCS		Plutonium Isotopics by AEA
40818	3	41278	45850	DUP	W10GR00699	Plutonium Isotopics by AEA
40818	12	41278	45850	SAMPLE	W10GR00736	Plutonium Isotopics by AEA
40818	13	41278	45850	SURR	W10GR00736	Plutonium Isotopics by AEA
40818	14	41278	45850	SAMPLE	W10GR00737	Plutonium Isotopics by AEA
40818	15	41278	45850	SURR	W10GR00737	Plutonium Isotopics by AEA
40819	1	41279	45851	BLANK		Americium by AEA
40819	2	41279	45851	LCS		Americium by AEA
40819	3	41279	45851	DUP	W10GR00699	Americium by AEA
40819	12	41279	45851	SAMPLE	W10GR00736	Americium by AEA
40819	13	41279	45851	SURR	W10GR00736	Americium by AEA
40819	14	41279	45851	SAMPLE	W10GR00737	Americium by AEA
40819	15	41279	45851	SURR	W10GR00737	Americium by AEA

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
None No reference to any industry method.

LA-505-412 LA-505-412: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY
None No reference to any industry method.

LA-533-410 LA-533-410: ANION ANALYSIS BY ION CHROMATOGRAPHY
None No reference to any industry method.

LA-695-402 LA-695-402: DETERMINATION OF CYANIDE BY MIDIDISTILLATION AND SPECTROPHOTOMETRIC
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.

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-508-415	LA-508-415: OPERATION OF THE PROTEAN 2-INCH ALPHA/BETA COUNTING SYSTEM FOR GROSS	
	None	No reference to any industry method.
LA-508-421	LA-508-421: OPERATION OF THE TRI-CARB MODEL 2500TR LIQUID SCINTILLATION ANALYZER	
	None	No reference to any industry method.
LA-508-471	LA-508-471: ALPHA ENERGY ANALYZER DATA ACQUISITION AND SYSTEM CHECKOUT USING ALP	
	None	No reference to any industry method.
LA-508-481	LA-508-481: GAMMA ENERGY ANALYSIS USING PROCOUNT SOFTWARE	
	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.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00736
Client ID: B240J5 GPP WSCF
Matrix: SOIL

Group #: WSCF20100371
Department: Inorganic
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography Prep											**03/22/10**
Anions by Ion Chromatography											
Fluoride	16984-48-8	LA-533-410	DNU	< 1.49	mg/kg			49.73	1.5		03/22/10
Chloride	16887-00-6	LA-533-410	BDN	4.29	mg/kg			49.73	2.1		03/22/10
Nitrogen in Nitrite	NO2-N	LA-533-410	DNU	< 0.895	mg/kg			49.73	0.90		03/22/10
Nitrogen in Nitrate	NO3-N	LA-533-410	DN	6.26	mg/kg			49.73	1.5		03/22/10
Phosphate (P) by IC	PO4-P	LA-533-410	DNU	< 3.48	mg/kg			49.73	3.5		03/22/10
Sulfate	14808-79-8	LA-533-410	BD	17.9	mg/kg			49.73	3.3		03/22/10
Cyanide											
Cyanide	57-12-5	LA-695-402	U	< 0.200	mg/kg			1.00	0.20		03/24/10
ICP Metals Analysis, Grd H20 P Prep											**03/21/10**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411		2.51e+04	mg/kg			1.00e+002	1.8		03/22/10
Magnesium	7439-95-4	LA-505-411		4.90e+03	mg/kg			1.00e+002	1.6		03/22/10
Potassium	7440-09-7	LA-505-411		1.16e+03	mg/kg			1.00e+002	5.5		03/22/10
Sodium	7440-23-5	LA-505-411	N	354	mg/kg			1.00e+002	1.7		03/22/10
Calcium	7440-70-2	LA-505-411		5.60e+03	mg/kg			1.00e+002	3.9		03/22/10
Lithium	7439-93-2	LA-505-411		5.19	mg/kg			1.00e+002	0.40		03/22/10
Titanium	7440-32-6	LA-505-411		2.60e+03	mg/kg			1.00e+002	0.40		03/22/10
Boron	7440-42-8	LA-505-411	E	12.3	mg/kg			1.00e+002	1.9		03/22/10
Bismuth	7440-69-9	LA-505-411	U	< 2.30	mg/kg			1.00e+002	2.3		03/22/10
ICP-200.8 MS All possible meta Prep											**03/18/10**
ICP-200.8 MS All possible meta											
Aluminum	7429-90-5	LA-505-412	X	6.08e+03	mg/kg			0.99	4.94		03/19/10
Manganese	7439-96-5	LA-505-412		327	mg/kg			0.99	0.0988		03/19/10

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

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

REVISION 1

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00736
Client ID: B240J5 GPP WSCF
Matrix: SOIL

Group #: WSCF20100371
Department: Inorganic
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Nickel	7440-02-0	LA-505-412		7.86	mg/kg			0.99	0.198		03/19/10
Silver	7440-22-4	LA-505-412	U	< 0.0988	mg/kg			0.99	0.0988		03/19/10
Antimony	7440-36-0	LA-505-412	U	< 0.296	mg/kg			0.99	0.296		03/19/10
Barium	7440-39-3	LA-505-412		80.7	mg/kg			0.99	0.198		03/19/10
Beryllium	7440-41-7	LA-505-412		0.160	mg/kg			0.99	0.0494		03/19/10
Cadmium	7440-43-9	LA-505-412	U	< 0.0988	mg/kg			0.99	0.0988		03/19/10
Chromium	7440-47-3	LA-505-412		6.85	mg/kg			0.99	0.494		03/19/10
Cobalt	7440-48-4	LA-505-412		7.55	mg/kg			0.99	0.0494		03/19/10
Copper	7440-50-8	LA-505-412		10.9	mg/kg			0.99	0.0988		03/19/10
Vanadium	7440-62-2	LA-505-412		53.2	mg/kg			0.99	0.198		03/19/10
Zinc	7440-66-6	LA-505-412		47.6	mg/kg			0.99	0.791		03/19/10
Lead	7439-92-1	LA-505-412		3.68	mg/kg			0.99	0.0988		03/19/10
Mercury	7439-97-6	LA-505-412	U	< 0.0494	mg/kg			0.99	0.0494		03/19/10
Molybdenum	7439-98-7	LA-505-412		0.300	mg/kg			0.99	0.0494		03/19/10
Uranium	7440-61-1	LA-505-412		0.370	mg/kg			0.99	0.0494		03/19/10
Arsenic	7440-38-2	LA-505-412		1.92	mg/kg			0.99	0.395		03/19/10
Selenium	7782-49-2	LA-505-412		0.910	mg/kg			0.99	0.296		03/19/10
Thallium	7440-28-0	LA-505-412	NU	< 0.0988	mg/kg			0.99	0.0988		03/19/10
Strontium	7440-24-6	LA-505-412		26.2	mg/kg			0.99	0.0988		03/19/10

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)
E - Analyte is an estimate, has potentially larger errors(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
D - Analyte was identified at a secondary dilution factor(inorg)
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* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

REVISION 1

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00737
Client ID: B240J7 GPP WSCF
Matrix: SOIL
Group #: WSCF20100371
Department: Inorganic
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Anions by Ion Chromatography Prep											**03/22/10**
Anions by Ion Chromatography											
Fluoride	16984-48-8	LA-533-410	DNU	< 1.49	mg/kg			49.83	1.5		03/22/10
Chloride	16887-00-6	LA-533-410	BDN	6.26	mg/kg			49.83	2.1		03/22/10
Nitrogen in Nitrite	NO2-N	LA-533-410	DNU	< 0.897	mg/kg			49.83	0.90		03/22/10
Nitrogen in Nitrate	NO3-N	LA-533-410	DN	28.3	mg/kg			49.83	1.5		03/22/10
Phosphate (P) by IC	PO4-P	LA-533-410	DNU	< 3.49	mg/kg			49.83	3.5		03/22/10
Sulfate	14808-79-8	LA-533-410	D	190	mg/kg			49.83	3.3		03/22/10
Cyanide											
Cyanide	57-12-5	LA-695-402	U	< 0.200	mg/kg			1.00	0.20		03/24/10
ICP Metals Analysis, Grd H20 P Prep											**03/21/10**
ICP Metals Analysis, Grd H20 P											
Iron	7439-89-6	LA-505-411		2.24e+04	mg/kg			99.84	1.8		03/22/10
Magnesium	7439-95-4	LA-505-411		4.26e+03	mg/kg			99.84	1.6		03/22/10
Potassium	7440-09-7	LA-505-411		1.31e+03	mg/kg			99.84	5.5		03/22/10
Sodium	7440-23-5	LA-505-411	N	352	mg/kg			99.84	1.7		03/22/10
Calcium	7440-70-2	LA-505-411		3.96e+03	mg/kg			99.84	3.9		03/22/10
Lithium	7439-93-2	LA-505-411		7.17	mg/kg			99.84	0.40		03/22/10
Titanium	7440-32-6	LA-505-411		2.16e+03	mg/kg			99.84	0.40		03/22/10
Boron	7440-42-8	LA-505-411	BE	9.24	mg/kg			99.84	1.9		03/22/10
Bismuth	7440-69-9	LA-505-411	U	< 2.30	mg/kg			99.84	2.3		03/22/10
ICP-200.8 MS All possible meta Prep											**03/18/10**
ICP-200.8 MS All possible meta											
Aluminum	7429-90-5	LA-505-412	X	6.01e+03	mg/kg			0.92	4.61		03/19/10
Manganese	7439-96-5	LA-505-412		174	mg/kg			0.92	0.0923		03/19/10

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)
E - Analyte is an estimate, has potentially larger errors(inorg)
N - Spike sample recovery is outside control limits.(inorg)
U - Analyzed for but not detected above limiting criteria(inorg)
X - Other flags/notes described in the comments/narrative(inorg)

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

REVISION 1

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00737
Client ID: B240J7 GPP WSCF
Matrix: SOIL

Group #: WSCF20100371
Department: Inorganic
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Nickel	7440-02-0	LA-505-412		7.27	mg/kg			0.92	0.185		03/19/10
Silver	7440-22-4	LA-505-412		0.550	mg/kg			0.92	0.0923		03/19/10
Antimony	7440-36-0	LA-505-412	U	< 0.277	mg/kg			0.92	0.277		03/19/10
Barium	7440-39-3	LA-505-412		59.5	mg/kg			0.92	0.185		03/19/10
Beryllium	7440-41-7	LA-505-412		0.120	mg/kg			0.92	0.0461		03/19/10
Cadmium	7440-43-9	LA-505-412		0.410	mg/kg			0.92	0.0923		03/19/10
Chromium	7440-47-3	LA-505-412		9.34	mg/kg			0.92	0.461		03/19/10
Cobalt	7440-48-4	LA-505-412		4.98	mg/kg			0.92	0.0461		03/19/10
Copper	7440-50-8	LA-505-412		11.1	mg/kg			0.92	0.0923		03/19/10
Vanadium	7440-62-2	LA-505-412		50.6	mg/kg			0.92	0.185		03/19/10
Zinc	7440-66-6	LA-505-412		53.5	mg/kg			0.92	0.738		03/19/10
Lead	7439-92-1	LA-505-412		99.5	mg/kg			0.92	0.0923		03/19/10
Mercury	7439-97-6	LA-505-412		0.700	mg/kg			0.92	0.0461		03/19/10
Molybdenum	7439-98-7	LA-505-412		0.520	mg/kg			0.92	0.0461		03/19/10
Uranium	7440-61-1	LA-505-412		0.890	mg/kg			0.92	0.0461		03/19/10
Arsenic	7440-38-2	LA-505-412		2.86	mg/kg			0.92	0.369		03/19/10
Selenium	7782-49-2	LA-505-412		1.08	mg/kg			0.92	0.277		03/19/10
Thallium	7440-28-0	LA-505-412	NU	< 0.0923	mg/kg			0.92	0.0923		03/19/10
Strontium	7440-24-6	LA-505-412		19.0	mg/kg			0.92	0.0923		03/19/10

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

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

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: Anions by Ion Chromatography

Sample Date: 03/09/10
Receive Date:03/11/10

Lab ID: W10GR00700
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	<2.148121		RPD			n/a	20.000	U	03/22/10
DUP	Fluoride	16984-48-8	<1.498689		RPD			n/a	20.000	U	03/22/10
DUP	Nitrogen in Nitrite	NO2-N	<0.899213		RPD			n/a	20.000	U	03/22/10
DUP	Nitrogen in Nitrate	NO3-N	3.5784		RPD			3.796	20.000		03/22/10
DUP	Phosphate (P) by IC	PO4-P	<3.496941		RPD			n/a	20.000	U	03/22/10
DUP	Sulfate	14808-79-8	3.4912		RPD			n/a	20.000		03/22/10
MS	Chloride	16887-00-6	0.746149	74.990	% Recov	80.000	120.000		*		03/22/10
MS	Fluoride	16984-48-8	0.258401	50.667	% Recov	80.000	120.000		*		03/22/10
MS	Nitrogen in Nitrite	NO2-N	0.198104	39.860	% Recov	80.000	120.000		*		03/22/10
MS	Nitrogen in Nitrate	NO3-N	0.205811	45.736	% Recov	80.000	120.000		*		03/22/10
MS	Phosphate (P) by IC	PO4-P	0.6902	71.375	% Recov	80.000	120.000		*		03/22/10
MS	Sulfate	14808-79-8	2.009	100.450	% Recov	80.000	120.000				03/22/10
MSD	Chloride	16887-00-6	0.747836	75.159	% Recov	80.000	120.000		*		03/22/10
MSD	Fluoride	16984-48-8	0.261616	51.297	% Recov	80.000	120.000		*		03/22/10
MSD	Nitrogen in Nitrite	NO2-N	0.196891	39.616	% Recov	80.000	120.000		*		03/22/10
MSD	Nitrogen in Nitrate	NO3-N	0.203927	45.317	% Recov	80.000	120.000		*		03/22/10
MSD	Phosphate (P) by IC	PO4-P	0.675764	69.883	% Recov	80.000	120.000		*		03/22/10
MSD	Sulfate	14808-79-8	2.060315	103.016	% Recov	80.000	120.000				03/22/10
SPK-RPD	Chloride	16887-00-6	75.159		RPD			0.225	20.000		03/22/10
SPK-RPD	Fluoride	16984-48-8	51.297		RPD			1.236	20.000		03/22/10
SPK-RPD	Nitrogen in Nitrite	NO2-N	39.616		RPD			0.614	20.000		03/22/10
SPK-RPD	Nitrogen in Nitrate	NO3-N	45.317		RPD			0.920	20.000		03/22/10
SPK-RPD	Phosphate (P) by IC	PO4-P	69.883		RPD			18.532	20.000		03/22/10
SPK-RPD	Sulfate	14808-79-8	103.016		RPD			1.472	20.000		03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
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
BATCH QC											
BLANK	Chloride	16887-00-6	<4.3e-2	n/a	mg/L	0.000	0.030			U	03/22/10
BLANK	Chloride	16887-00-6	<4.3e-2	n/a	mg/L	0.000	0.030			U	03/22/10
BLANK	Fluoride	16984-48-8	<3e-2	n/a	mg/L	0.000	0.030			U	03/22/10
BLANK	Fluoride	16984-48-8	<3e-2	n/a	mg/L	0.000	0.030			U	03/22/10
BLANK	Nitrogen in Nitrite	NO2-N	<1.8e-2	n/a	mg/L	0.000	0.020			U	03/22/10
BLANK	Nitrogen in Nitrite	NO2-N	<1.8e-2	n/a	mg/L	0.000	0.020			U	03/22/10
BLANK	Nitrogen in Nitrate	NO3-N	<3.1e-2	n/a	mg/L	0.000	0.040			U	03/22/10
BLANK	Nitrogen in Nitrate	NO3-N	<3.1e-2	n/a	mg/L	0.000	0.040			U	03/22/10
BLANK	Phosphate (P) by IC	PO4-P	<7e-2	n/a	mg/L	0.000	0.200			U	03/22/10
BLANK	Phosphate (P) by IC	PO4-P	<7e-2	n/a	mg/L	0.000	0.200			U	03/22/10
BLANK	Sulfate	14808-79-8	<6.6e-2	n/a	mg/L	0.000	0.200			U	03/22/10
BLANK	Sulfate	14808-79-8	<6.6e-2	n/a	mg/L	0.000	0.200			U	03/22/10
LCS	Chloride	16887-00-6	192.6042	96.786	% Recov	80.000	120.000				03/22/10
LCS	Fluoride	16984-48-8	104.1928	102.150	% Recov	80.000	120.000				03/22/10
LCS	Nitrogen in Nitrite	NO2-N	95.8797	96.458	% Recov	80.000	120.000				03/22/10
LCS	Nitrogen in Nitrate	NO3-N	92.9195	103.359	% Recov	80.000	120.000				03/22/10
LCS	Phosphate (P) by IC	PO4-P	196.2027	101.449	% Recov	80.000	120.000				03/22/10
LCS	Sulfate	14808-79-8	383.519	95.880	% Recov	80.000	120.000				03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: Cyanide by Midi/Spectrophotom

Sample Date: 03/11/10
Receive Date:03/15/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Cyanide by Midi/Spectrophotom	57-12-5	1.89	94.500	% Recov	75.000	125.000				03/24/10
MSD	Cyanide by Midi/Spectrophotom	57-12-5	1.85	92.500	% Recov	75.000	125.000				03/24/10
SPK-RPD	Cyanide by Midi/Spectrophotom	57-12-5	92.500		RPD			2.139	20.000		03/24/10
BATCH QC											
BLANK	Cyanide by Midi/Spectrophotom	57-12-5	< 4	n/a	ug/L	-4.000	4.000			U	03/24/10
LCS	Cyanide by Midi/Spectrophotom	57-12-5	60.7	95.591	% Recov	85.000	115.000				03/24/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 03/11/10
Receive Date:03/15/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Boron	7440-42-8	201	100.500	% Recov	75.000	125.000				03/22/10
MS	Bismuth	7440-69-9	196.8	98.400	% Recov	75.000	125.000				03/22/10
MS	Calcium	7440-70-2	1328	664.000	% Recov	75.000	125.000			*	03/22/10
MS	Iron	7439-89-6	620	310.000	% Recov	75.000	125.000			*	03/22/10
MS	Potassium	7440-09-7	2043	102.150	% Recov	75.000	125.000				03/22/10
MS	Lithium	7439-93-2	96.413	96.413	% Recov	70.000	130.000				03/22/10
MS	Magnesium	7439-95-4	462	231.000	% Recov	75.000	125.000			*	03/22/10
MS	Sodium	7440-23-5	490.4	245.200	% Recov	75.000	125.000			*	03/22/10
MS	Titanium	7440-32-6	24	12.000	% Recov	75.000	125.000			*	03/22/10
MSD	Boron	7440-42-8	207.2	103.085	% Recov	75.000	125.000				03/22/10
MSD	Bismuth	7440-69-9	202.6	100.796	% Recov	75.000	125.000				03/22/10
MSD	Calcium	7440-70-2	1263	628.358	% Recov	75.000	125.000			*	03/22/10
MSD	Iron	7439-89-6	820	407.960	% Recov	75.000	125.000			*	03/22/10
MSD	Potassium	7440-09-7	2121	105.522	% Recov	75.000	125.000				03/22/10
MSD	Lithium	7439-93-2	98.513	98.513	% Recov	75.000	125.000				03/22/10
MSD	Magnesium	7439-95-4	226	112.438	% Recov	75.000	125.000				03/22/10
MSD	Sodium	7440-23-5	511.4	254.428	% Recov	75.000	125.000			*	03/22/10
MSD	Titanium	7440-32-6	239	118.905	% Recov	75.000	125.000				03/22/10
SPK-RPD	Boron	7440-42-8	103.085		RPD			2.539	20.000		03/22/10
SPK-RPD	Bismuth	7440-69-9	100.796		RPD			2.406	20.000		03/22/10
SPK-RPD	Calcium	7440-70-2	628.358		RPD			5.516	20.000		03/22/10
SPK-RPD	Iron	7439-89-6	407.960		RPD			27.288	20.000 *		03/22/10
SPK-RPD	Potassium	7440-09-7	105.522		RPD			3.247	20.000		03/22/10
SPK-RPD	Lithium	7439-93-2	98.513		RPD			2.155	20.000		03/22/10
SPK-RPD	Magnesium	7439-95-4	112.438		RPD			69.044	20.000 *		03/22/10
SPK-RPD	Sodium	7440-23-5	254.428		RPD			3.694	20.000		03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

Sample Date: 03/11/10
Receive Date:03/15/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Titanium	7440-32-6	118.905		RPD			163.332	20.000 *		03/22/10
Lab ID: W10GR00758											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Boron	7440-42-8	199.32	99.164	% Recov	75.000	125.000				03/22/10
MS	Lithium	7439-93-2	98.165	98.165	% Recov	70.000	130.000				03/22/10
MSD	Boron	7440-42-8	187.72	94.332	% Recov	75.000	125.000				03/22/10
MSD	Lithium	7439-93-2	98.265	98.759	% Recov	75.000	125.000				03/22/10
SPK-RPD	Boron	7440-42-8	94.332		RPD			4.994	20.000		03/22/10
SPK-RPD	Lithium	7439-93-2	98.759		RPD			0.603	20.000		03/22/10
Lab ID: W10GR00862											
BATCH QC ASSOCIATED WITH SAMPLE											
MS	Boron	7440-42-8	200.33	99.173	% Recov	75.000	125.000				03/22/10
MS	Bismuth	7440-69-9	196.3	97.178	% Recov	75.000	125.000				03/22/10
MSD	Boron	7440-42-8	197.43	99.712	% Recov	75.000	125.000				03/22/10
MSD	Bismuth	7440-69-9	192.5	97.222	% Recov	75.000	125.000				03/22/10
SPK-RPD	Boron	7440-42-8	99.712		RPD			0.542	20.000		03/22/10
SPK-RPD	Bismuth	7440-69-9	97.222		RPD			0.045	20.000		03/22/10
BATCH QC											
BLANK	Boron	7440-42-8	<1.9e-2	n/a	ug/mL					U	03/22/10
BLANK	Bismuth	7440-69-9	<2.3e-2	n/a	ug/mL					U	03/22/10
BLANK	Calcium	7440-70-2	<3.9e-2	n/a	ug/mL					U	03/22/10
BLANK	Iron	7439-89-6	<1.8e-2	n/a	ug/mL					U	03/22/10
BLANK	Potassium	7440-09-7	<5.5e-2	n/a	ug/mL					U	03/22/10
BLANK	Lithium	7439-93-2	<4e-3	n/a	ug/mL					U	03/22/10
BLANK	Magnesium	7439-95-4	<1.6e-2	n/a	ug/mL					U	03/22/10
BLANK	Sodium	7440-23-5	<1.7e-2	n/a	ug/mL					U	03/22/10
BLANK	Titanium	7440-32-6	<4e-3	n/a	ug/mL					U	03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
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	Boron	7440-42-8	133.8	116.348	% Recov	45.000	156.000				03/22/10
LCS	Bismuth	7440-69-9	101.1	100.798	% Recov	80.000	120.000				03/22/10
LCS	Calcium	7440-70-2	4252	108.469	% Recov	76.000	124.000				03/22/10
LCS	Iron	7439-89-6	17680	131.940	% Recov	47.000	152.000				03/22/10
LCS	Potassium	7440-09-7	3461	100.029	% Recov	64.000	136.000				03/22/10
LCS	Lithium	7439-93-2	6.897	81.718	% Recov	80.000	120.000				03/22/10
LCS	Magnesium	7439-95-4	2908	111.418	% Recov	71.000	129.000				03/22/10
LCS	Sodium	7440-23-5	559.6	95.170	% Recov	51.000	149.000				03/22/10
LCS	Titanium	7440-32-6	379	142.481	% Recov	9.000	191.000				03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 03/11/10
Receive Date:03/15/10

Lab ID: W10GR00736
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	97.51	97.510	% Recov	70.000	130.000				03/19/10
MS	Aluminum	7429-90-5	1476	147.600	% Recov	70.000	130.000			*	03/19/10
MS	Arsenic	7440-38-2	98.88	98.880	% Recov	70.000	130.000				03/19/10
MS	Barium	7440-39-3	105.61	105.610	% Recov	70.000	130.000				03/19/10
MS	Beryllium	7440-41-7	91.61	91.610	% Recov	70.000	130.000				03/19/10
MS	Cadmium	7440-43-9	98.13	98.130	% Recov	70.000	130.000				03/19/10
MS	Cobalt	7440-48-4	91.09	91.090	% Recov	70.000	130.000				03/19/10
MS	Chromium	7440-47-3	90.41	90.410	% Recov	70.000	130.000				03/19/10
MS	Copper	7440-50-8	86.71	86.710	% Recov	70.000	130.000				03/19/10
MS	Mercury	7439-97-6	2	100.000	% Recov	70.000	130.000				03/19/10
MS	Manganese	7439-96-5	100.3	100.300	% Recov	70.000	130.000				03/19/10
MS	Molybdenum	7439-98-7	102.3	102.300	% Recov	70.000	130.000				03/19/10
MS	Nickel	7440-02-0	88.54	88.540	% Recov	70.000	130.000				03/19/10
MS	Lead	7439-92-1	100.72	100.720	% Recov	70.000	130.000				03/19/10
MS	Antimony	7440-36-0	101.2	101.200	% Recov	70.000	130.000				03/19/10
MS	Selenium	7782-49-2	99.89	99.890	% Recov	70.000	130.000				03/19/10
MS	Strontium	7440-24-6	104.14	104.140	% Recov	70.000	130.000				03/19/10
MS	Thallium	7440-28-0	54.76	54.760	% Recov	70.000	130.000			*	03/19/10
MS	Uranium	7440-61-1	99.83	99.830	% Recov	70.000	130.000				03/19/10
MS	Vanadium	7440-62-2	87.48	87.480	% Recov	70.000	130.000				03/19/10
MS	Zinc	7440-66-6	93.75	93.750	% Recov	70.000	130.000				03/19/10
MSD	Silver	7440-22-4	97.77	97.770	% Recov	70.000	130.000				03/19/10
MSD	Aluminum	7429-90-5	1529	152.900	% Recov	70.000	130.000			*	03/19/10
MSD	Arsenic	7440-38-2	99.78	99.780	% Recov	70.000	130.000				03/19/10
MSD	Barium	7440-39-3	102.31	102.310	% Recov	70.000	130.000				03/19/10
MSD	Beryllium	7440-41-7	91.88	91.880	% Recov	70.000	130.000				03/19/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 03/11/10
Receive Date:03/15/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
MSD	Cadmium	7440-43-9	99.41	99.410	% Recov	70.000	130.000				03/19/10
MSD	Cobalt	7440-48-4	89.15	89.150	% Recov	70.000	130.000				03/19/10
MSD	Chromium	7440-47-3	91.08	91.080	% Recov	70.000	130.000				03/19/10
MSD	Copper	7440-50-8	87.54	87.540	% Recov	70.000	130.000				03/19/10
MSD	Mercury	7439-97-6	2.06	103.000	% Recov	70.000	130.000				03/19/10
MSD	Manganese	7439-96-5	94.7	94.700	% Recov	70.000	130.000				03/19/10
MSD	Molybdenum	7439-98-7	102.1	102.100	% Recov	70.000	130.000				03/19/10
MSD	Nickel	7440-02-0	88.51	88.510	% Recov	70.000	130.000				03/19/10
MSD	Lead	7439-92-1	101.52	101.520	% Recov	70.000	130.000				03/19/10
MSD	Antimony	7440-36-0	99.41	99.410	% Recov	70.000	130.000				03/19/10
MSD	Selenium	7782-49-2	99.69	99.690	% Recov	70.000	130.000				03/19/10
MSD	Strontium	7440-24-6	106.24	106.240	% Recov	70.000	130.000				03/19/10
MSD	Thallium	7440-28-0	53.1	53.100	% Recov	70.000	130.000				03/19/10
MSD	Uranium	7440-61-1	100.73	100.730	% Recov	70.000	130.000				03/19/10
MSD	Vanadium	7440-62-2	86.08	86.080	% Recov	70.000	130.000				03/19/10
MSD	Zinc	7440-66-6	111.05	111.050	% Recov	70.000	130.000				03/19/10
SPK-RPD	Silver	7440-22-4	97.770		RPD			0.266	20.000		03/19/10
SPK-RPD	Aluminum	7429-90-5	152.900		RPD			3.527	20.000		03/19/10
SPK-RPD	Arsenic	7440-38-2	99.780		RPD			0.906	20.000		03/19/10
SPK-RPD	Barium	7440-39-3	102.310		RPD			3.174	20.000		03/19/10
SPK-RPD	Beryllium	7440-41-7	91.880		RPD			0.294	20.000		03/19/10
SPK-RPD	Cadmium	7440-43-9	99.410		RPD			1.296	20.000		03/19/10
SPK-RPD	Cobalt	7440-48-4	89.150		RPD			2.153	20.000		03/19/10
SPK-RPD	Chromium	7440-47-3	91.080		RPD			0.738	20.000		03/19/10
SPK-RPD	Copper	7440-50-8	87.540		RPD			0.953	20.000		03/19/10
SPK-RPD	Mercury	7439-97-6	103.000		RPD			2.956	20.000		03/19/10
SPK-RPD	Manganese	7439-96-5	94.700		RPD			5.744	20.000		03/19/10
SPK-RPD	Molybdenum	7439-98-7	102.100		RPD			0.196	20.000		03/19/10
SPK-RPD	Nickel	7440-02-0	88.510		RPD			0.034	20.000		03/19/10
SPK-RPD	Lead	7439-92-1	101.520		RPD			0.791	20.000		03/19/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
Test: ICP-200.8 MS All possible meta

Sample Date: 03/11/10
Receive Date:03/15/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
SPK-RPD	Antimony	7440-36-0	99.410		RPD			1.785	20.000		03/19/10
SPK-RPD	Selenium	7782-49-2	99.690		RPD			0.200	20.000		03/19/10
SPK-RPD	Strontium	7440-24-6	106.240		RPD			1.996	20.000		03/19/10
SPK-RPD	Thallium	7440-28-0	53.100		RPD			3.078	20.000		03/19/10
SPK-RPD	Uranium	7440-61-1	100.730		RPD			0.897	20.000		03/19/10
SPK-RPD	Vanadium	7440-62-2	86.080		RPD			1.613	20.000		03/19/10
SPK-RPD	Zinc	7440-66-6	111.050		RPD			16.895	20.000		03/19/10
BATCH QC											
BLANK	Silver	7440-22-4	<0.1	n/a	ug/L					U	03/19/10
BLANK	Aluminum	7429-90-5	<5	n/a	ug/L					U	03/19/10
BLANK	Arsenic	7440-38-2	<0.4	n/a	ug/L					U	03/19/10
BLANK	Barium	7440-39-3	<0.2	n/a	ug/L					U	03/19/10
BLANK	Beryllium	7440-41-7	<5e-2	n/a	ug/L					U	03/19/10
BLANK	Cadmium	7440-43-9	<0.1	n/a	ug/L					U	03/19/10
BLANK	Cobalt	7440-48-4	<5e-2	n/a	ug/L					U	03/19/10
BLANK	Chromium	7440-47-3	<0.5	n/a	ug/L					U	03/19/10
BLANK	Copper	7440-50-8	<0.1	n/a	ug/L					U	03/19/10
BLANK	Mercury	7439-97-6	<5e-2	n/a	ug/L					U	03/19/10
BLANK	Manganese	7439-96-5	<0.1	n/a	ug/L					U	03/19/10
BLANK	Molybdenum	7439-98-7	<5e-2	n/a	ug/L					U	03/19/10
BLANK	Nickel	7440-02-0	<0.2	n/a	ug/L					U	03/19/10
BLANK	Lead	7439-92-1	<0.1	n/a	ug/L					U	03/19/10
BLANK	Antimony	7440-36-0	<0.3	n/a	ug/L					U	03/19/10
BLANK	Selenium	7782-49-2	<0.3	n/a	ug/L					U	03/19/10
BLANK	Strontium	7440-24-6	0.17	0.170	ug/L						03/19/10
BLANK	Thallium	7440-28-0	<0.1	n/a	ug/L					U	03/19/10
BLANK	Uranium	7440-61-1	<5e-2	n/a	ug/L					U	03/19/10
BLANK	Vanadium	7440-62-2	<0.2	n/a	ug/L					U	03/19/10
BLANK	Zinc	7440-66-6	<0.8	n/a	ug/L					U	03/19/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20100371
Matrix: SOLID
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	Silver	7440-22-4	99.64	98.653	% Recov	81.000	128.000				03/19/10
LCS	Aluminum	7429-90-5	7153	86.598	% Recov	47.000	122.000				03/19/10
LCS	Arsenic	7440-38-2	131.2	99.394	% Recov	78.000	124.000				03/19/10
LCS	Barium	7440-39-3	310.8	97.429	% Recov	77.000	119.000				03/19/10
LCS	Beryllium	7440-41-7	83.69	93.508	% Recov	78.000	118.000				03/19/10
LCS	Cadmium	7440-43-9	66.37	99.805	% Recov	75.000	127.000				03/19/10
LCS	Cobalt	7440-48-4	68.63	93.885	% Recov	75.000	124.000				03/19/10
LCS	Chromium	7440-47-3	64.4	88.340	% Recov	67.000	119.000				03/19/10
LCS	Copper	7440-50-8	59.76	87.241	% Recov	68.000	122.000				03/19/10
LCS	Mercury	7439-97-6	7.41	89.493	% Recov	72.000	117.000				03/19/10
LCS	Manganese	7439-96-5	434.3	95.872	% Recov	72.000	123.000				03/19/10
LCS	Molybdenum	7439-98-7	50.12	102.916	% Recov	80.000	125.000				03/19/10
LCS	Nickel	7440-02-0	52.07	93.651	% Recov	73.000	123.000				03/19/10
LCS	Lead	7439-92-1	127.7	98.231	% Recov	77.000	125.000				03/19/10
LCS	Antimony	7440-36-0	146	161.863	% Recov	65.000	203.000				03/19/10
LCS	Selenium	7782-49-2	165	102.484	% Recov	82.000	129.000				03/19/10
LCS	Strontium	7440-24-6	53.73	98.768	% Recov	77.000	118.000				03/19/10
LCS	Thallium	7440-28-0	101.1	76.015	% Recov	55.000	130.000				03/19/10
LCS	Uranium	7440-61-1	396.6	99.150	% Recov	84.000	110.000				03/19/10
LCS	Vanadium	7440-62-2	76.27	91.892	% Recov	65.000	122.000				03/19/10
LCS	Zinc	7440-66-6	181.5	102.542	% Recov	75.000	130.000				03/19/10

REVISION 1

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-060

Group #: WSCF20100371
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Aluminum sample result more than 4X spike amount spike information not valid Thallium spike recovery low. "N" flag ICP-AES: Iron, magnesium, calcium, and titanium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. High sodium spike recoveries; "N" flag. Estimated boron results due to iron interference; "E" flag. Sample results less than 5 times the MDL; "B" flag. IC Matrix Spikes had low recovery for all but Sulfate. This is likely due to matrix effects imparted by the sample. jpw U-234 blank prep result is less than two times the MDC. lmh U-234 and U-238 duplicate is flagged due to the heterogeneous nature of the sample. lmh Pu-239 duplicate is flagged due to the heterogeneous nature of the sample. lmh Am-241 blank prep result is less than two times the MDC. lmh Am-241 duplicate is flagged due to the heterogeneous

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

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-060

Group #: WSCF20100371
Department: Inorganic

Sample #	Client ID	Lab Area	Test	Comment
				nature of the sample. lmh

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

REVISION 1

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00736
Client ID: B240J5 GPP WSCF
Matrix: SOIL

Group #: WSCF20100371
Department: Radiochemistry
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Americium by AEA											
Americium-241	14596-10-2	LA-508-471		0.0220	pCi/g	+-0.0136	pCi/g	1.00	0.014		03/25/10
Am-243 tracer by AEA	AM243	LA-508-471		4.10	pCi/g			1.00	0.011		03/25/10
Gamma Energy Analysis-grd H2O											
Cesium-137	10045-97-3	LA-508-481		3.58	pCi/g	+-0.651	pCi/g	1.00	0.066		03/16/10
Europium-154	15585-10-1	LA-508-481	U	7.46e-03	pCi/g	+-0.0746	pCi/g	1.00	0.22		03/16/10
Plutonium Isotopics by AEA											
Plutonium-238	13981-16-3	LA-508-471	U	-1.70e-03	pCi/g	+-0.0123	pCi/g	1.00	0.026		03/25/10
Pu-239/240 by AEA	PU-239/240	LA-508-471	U	8.60e-03	pCi/g	+-9.29e-03	pCi/g	1.00	0.013		03/25/10
Pu-242	13982-10-0	LA-508-471		6.10	pCi/g			1.00	0.016		03/25/10
Strontium 89/90											
Strontium-89/90	SR-RAD	LA-508-415	U	-0.870	pCi/g	+-0.870	pCi/g	1.00	0.39		03/24/10
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		90.5	Percent			1.00	0.0		03/24/10
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421	U	-0.200	pCi/g	+-0.200	pCi/g	1.00	0.30		03/22/10
Uranium Isotopics by AEA											
Uranium-233/234	U-233/234	LA-508-471		0.170	pCi/g	+-0.0612	pCi/g	1.00	0.030		03/25/10
Uranium-235	15117-96-1	LA-508-471		7.60e-03	pCi/g	+-8.97e-03	pCi/g	1.00	6.9e-03		03/25/10
Uranium-238	U-238	LA-508-471		0.130	pCi/g	+-0.0481	pCi/g	1.00	0.017		03/25/10
U-232 tracer by AEA	U232	LA-508-471		4.00	pCi/g			1.00	0.051		03/25/10

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

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

REVISION 1

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F10-060
Sample # W10GR00737
Client ID: B240J7 GPP WSCF
Matrix: SOIL

Group #: WSCF20100371
Department: Radiochemistry
Sampled: 03/11/10
Received: 03/15/10

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Americium by AEA											
Americium-241	14596-10-2	LA-508-471		0.620	pCi/g	+-0.149	pCi/g	1.00	0.018		03/25/10
Am-243 tracer by AEA	AM243	LA-508-471		4.10	pCi/g			1.00	0.016		03/25/10
Gamma Energy Analysis-grd H2O											
Cesium-137	10045-97-3	LA-508-481		37.1	pCi/g	+-6.60	pCi/g	1.00	0.15		03/18/10
Europium-154	15585-10-1	LA-508-481	U	-0.120	pCi/g	+-0.194	pCi/g	1.00	0.32		03/18/10
Plutonium Isotopics by AEA											
Plutonium-238	13981-16-3	LA-508-471	U	0.0130	pCi/g	+-0.0168	pCi/g	1.00	0.027		03/25/10
Pu-239/240 by AEA	PU-239/240	LA-508-471		0.940	pCi/g	+-0.216	pCi/g	1.00	0.012		03/25/10
Pu-242	13982-10-0	LA-508-471		6.00	pCi/g			1.00	0.015		03/25/10
Strontium 89/90											
Strontium-89/90	SR-RAD	LA-508-415	U	-1.10	pCi/g	+-1.10	pCi/g	1.00	0.36		03/24/10
Sr-85 Tracer by Beta Counting	SR85	LA-508-415		96.9	Percent			1.00	0.0		03/24/10
TC99 by Liquid Scin.											
Tc-99 by Liquid Scin.	14133-76-7	LA-508-421		0.600	pCi/g	+-0.222	pCi/g	1.00	0.30		03/22/10
Uranium Isotopics by AEA											
Uranium-233/234	U-233/234	LA-508-471		0.450	pCi/g	+-0.130	pCi/g	1.00	0.015		03/25/10
Uranium-235	15117-96-1	LA-508-471		0.0340	pCi/g	+-0.0197	pCi/g	1.00	6.1e-03		03/25/10
Uranium-238	U-238	LA-508-471		0.340	pCi/g	+-0.102	pCi/g	1.00	0.015		03/25/10
U-232 tracer by AEA	U232	LA-508-471		3.90	pCi/g			1.00	0.038		03/25/10

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

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

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: Americium by AEA

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Americium-241	14596-10-2	2.4		RPD			28.571	20.000		03/25/10
DUP	Am-243 tracer by AEA	AM243	4	98.670	% Recov	30.000	105.000				03/25/10
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Am-243 tracer by AEA	AM243	4.141	94.670	% Recov	30.000	105.000				03/25/10
Lab ID: W10GR00737											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Am-243 tracer by AEA	AM243	4.054	85.800	% Recov	30.000	105.000				03/25/10
BATCH QC											
BLANK	Americium-241	14596-10-2	2.5e-2	0.025	pCi/g	-10.000	1000.000				03/25/10
BLANK	Am-243 tracer by AEA	AM243	4.054	89.460	% Recov	30.000	105.000				03/25/10
LCS	Americium-241	14596-10-2	12.67	103.008	% Recov	80.000	120.000				03/25/10
LCS	Am-243 tracer by AEA	AM243	11.7	91.170	% Recov	30.000	105.000				03/25/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: Gamma Energy Analysis-grd H2O

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Cesium-137	10045-97-3	4475		RPD			0.089	20.000		03/16/10
DUP	Europium-154	15585-10-1	U1.024		RPD			n/a	20.000		03/16/10
BATCH QC											
BLANK	Cesium-137	10045-97-3	U1.814e-2	n/a	pCi/g	-10.000	1000.000				03/18/10
BLANK	Europium-154	15585-10-1	U5.898e-2	n/a	pCi/g	-10.000	1000.000				03/18/10
LCS	Cesium-137	10045-97-3	6451	106.805	% Recov	80.000	120.000				03/18/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: Plutonium Isotopics by AEA

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Plutonium-238	13981-16-3	0.22		RPD			9.524	20.000		03/25/10
DUP	Pu-239/240 by AEA	PU-239/240	16		RPD			28.571	20.000	*	03/25/10
DUP	Pu-242	13982-10-0	5.882	91.450	% Recov	30.000	105.000				03/25/10
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Pu-242	13982-10-0	6.09	80.030	% Recov	30.000	105.000				03/25/10
Lab ID: W10GR00737											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Pu-242	13982-10-0	5.961	87.060	% Recov	30.000	105.000				03/25/10
BATCH QC											
BLANK	Plutonium-238	13981-16-3	U-1.1e-2	n/a	pCi/g	-10.000	1000.000				03/25/10
BLANK	Pu-239/240 by AEA	PU-239/240	U6.5e-3	n/a	pCi/g	-10.000	1000.000				03/25/10
BLANK	Pu-242	PU242	5.961	77.490	% Recov	30.000	105.000				03/25/10
LCS	Pu-239/240 by AEA	PU-239/240	12.33	96.328	% Recov	80.000	120.000				03/25/10
LCS	Pu-242	PU242	17.2	81.900	% Recov	30.000	105.000				03/25/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: Strontium 89/90

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Sr-85 Tracer by Beta Counting	SR85	83.7	83.700	% Recov	30.000	105.000				03/24/10
DUP	Strontium-89/90	SR-RAD	13.0		RPD			3.125	20.000		03/24/10
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Sr-85 Tracer by Beta Counting	SR85	90.5	90.500	% Recov	30.000	105.000				03/24/10
Lab ID: W10GR00737											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	Sr-85 Tracer by Beta Counting	SR85	96.9	96.900	% Recov	30.000	105.000				03/24/10
BATCH QC											
BLANK	Sr-85 Tracer by Beta Counting	SR85	103.2	103.200	% Recov	30.000	105.000				03/24/10
BLANK	Strontium-89/90	10098-97-2	U-1.7	n/a	pCi/g	-10.000	300.000				03/24/10
LCS	Sr-85 Tracer by Beta Counting	SR85	90.4	90.400	% Recov	30.000	105.000				03/24/10
LCS	Strontium-89/90	10098-97-2	25.6	89.825	% Recov	80.000	120.000				03/24/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: TC99 by Liquid Scin.

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Tc-99 by Liquid Scin.	14133-76-7	U-0.1		RPD			n/a	20.000		03/22/10
MS	Tc-99 by Liquid Scin.	14133-76-7	43.1	107.912	% Recov	75.000	125.000				03/22/10
BATCH QC											
BLANK	Tc-99 by Liquid Scin.	14133-76-7	U-0.3	n/a	pCi/g	-10.000	1000.000				03/22/10
LCS	Tc-99 by Liquid Scin.	14133-76-7	9.6	103.784	% Recov	80.000	120.000				03/22/10

REVISION 1

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Radiochemistry

SDG Number: WSCF20100371
Matrix: SOLID
Test: Uranium Isotopics by AEA

Sample Date: 03/09/10
Receive Date:03/11/10

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W10GR00699											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	U-232 tracer by AEA	U232	3.842	83.140	% Recov	30.000	105.000				03/25/10
DUP	Uranium-233/234	U-233/234	2.4		RPD			28.571	20.000 *		03/25/10
DUP	Uranium-235	15117-96-1	0.17		RPD			19.355	20.000		03/25/10
DUP	Uranium-238	U-238	2.5		RPD			27.273	20.000 *		03/25/10
Lab ID: W10GR00736											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	U-232 tracer by AEA	U232	3.978	69.670	% Recov	30.000	105.000				03/25/10
Lab ID: W10GR00737											
BATCH QC ASSOCIATED WITH SAMPLE											
SURR	U-232 tracer by AEA	U232	3.894	75.680	% Recov	30.000	105.000				03/25/10
BATCH QC											
BLANK	U-232 tracer by AEA	U232	3.9	75.847	% Recov	30.000	105.000				03/25/10
BLANK	Uranium-233/234	13966-29-5	8.3e-3	0.008	pCi/g	-10.000	1000.000				03/25/10
BLANK	Uranium-235	15117-96-1	U6.8e-3	n/a	pCi/g	-10.000	1000.000				03/25/10
BLANK	Uranium-238	24678-82-8	U2.1e-3	n/a	pCi/g	-10.000	1000.000				03/25/10
LCS	U-232 tracer by AEA	U232	11.24	72.030	% Recov	30.000	105.000				03/25/10
LCS	Uranium-238	24678-82-8	19.87	105.272	% Recov	80.000	120.000				03/25/10

REVISION 1

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-060

Group #: WSCF20100371
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		ICP-MS: Aluminum sample result more than 4X spike amount spike information not valid Thallium spike recovery low. "N" flag ICP-AES: Iron, magnesium, calcium, and titanium sample results exceed spiking level by a factor of 4 so spike recoveries are not valid. High sodium spike recoveries; "N" flag. Estimated boron results due to iron interference; "E" flag. Sample results less than 5 times the MDL; "B" flag. IC Matrix Spikes had low recovery for all but Sulfate. This is likely due to matrix effects imparted by the sample. jpw U-234 blank prep result is less than two times the MDC. lmh U-234 and U-238 duplicate is flagged due to the heterogeneous nature of the sample. lmh Pu-239 duplicate is flagged due to the heterogeneous nature of the sample. lmh Am-241 blank prep result is less than two times the MDC. lmh Am-241 duplicate is flagged due to the heterogeneous

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

REVISION 1

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F10-060

Group #: WSCF20100371
Department: Radiochemistry

Sample #	Client ID	Lab Area	Test	Comment
				nature of the sample. lmh

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

REVISION 1

WSCF
TENTATIVELY IDENTIFIED PEAK REPORT

Attention: Steve Trent
Project Number F10-060 :F10-060

Group #: WSCF20100371
Department: Radiochemistry

Sample #	Client ID		Test Name	Peak Name	CAS#	RT	RQ	Result	Units
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	BI-214				1.2	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	BI-214 Count Error				29	%
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	K-40				14	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	K-40 Count Error				16	%
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	PB-212				0.71	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	PB-212 Count Error				19	%
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	RA-226				0.79	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	RA-226 Count Error				24	%
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	RA-228				0.57	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	RA-228 Count Error				43	%
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	TL-208				0.20	pCi/g
W10GR00736	B240J5	GPP	Gamma Energy Analysis-grd H2O	TL-208 Count Error				37	%
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	AC-228				1.0	pCi/g
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	AC-228 Count Error				36	%
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	K-40				17	pCi/g
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	K-40 Count Error				19	%
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	RA-228				1.0	pCi/g
W10GR00737	B240J7	GPP	Gamma Energy Analysis-grd H2O	RA-228 Count Error				36	%

RQ=Result Qualifier

REVISION 1

M4W41-SLF-10-222

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 4 pages
Including cover page

REVISION 1

Waste Sampling and Characterization Facility
P.O. BOX 1970 S3-30, Richland, WA 99352
PHONE: (509) 373-7004/FAX: (509) 373-7134

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program
Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 302427/ES10
Group#: 20100371
Project#: F10-060
Proj Mgr: Steve Trent
Phone: 373-5869

The following samples were received from you on 03/15/10. 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
W10GR00736	B240J5	GPP	Solid, or handle as if solid	03/11/10
		@2008 @AEA-30 @AEA-31 @AEA-32 @GEA-GPP		
		@GPP6010 @IC-30 @SR89_90 @TC99-30 CN-02		
W10GR00737	B240J7	GPP	Solid, or handle as if solid	03/11/10
		@2008 @AEA-30 @AEA-31 @AEA-32 @GEA-GPP		
		@GPP6010 @IC-30 @SR89_90 @TC99-30 CN-02		

Test Acronym Description

Test Acronym	Description
@2008	ICP-200.8 MS All possible meta
@AEA-30	Plutonium Isotopics by AEA
@AEA-31	Americium by AEA
@AEA-32	Uranium Isotopics by AEA
@GEA-GPP	Gamma Energy Analysis-grd H2O
@GPP6010	ICP Metals Analysis, Grd H20 P
@IC-30	Anions by Ion Chromatography
@SR89_90	Strontium 89/90
@TC99-30	TC99 by Liquid Scin.
CN-02	Cyanide by Midi/Spectrophotom

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-060-004 PAGE 1 OF 2

COLLECTOR

COMPANY CONTACT: BAMBERGER, MA
TELEPHONE NO.: 373-0880
PROJECT COORDINATOR: WIDRIG, DL
PRICE CODE: 8C
DATA TURNAROUND: 15 Days / 15 Days

SAMPLING LOCATION: 216-A-25 Pond; C6960
PROJECT DESIGNATION: 200-CW-1 Model Group 5 Sampling - Large Area Ponds - Soil Sampling
SAF NO.: F10-060
AIR QUALITY: ☐

ICE CHEST NO.
FIELD LOGBOOK NO.: HFN-N-507-5
ACTUAL SAMPLE DEPTH: 26-4.6 ft
COA: 302427ES10
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=Vegetation
W=Water
WI=Wipe
X=Other

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)

20160371

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C	None	None
TYPE OF CONTAINER	G	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	60mL	125mL	60mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Gamma Spectroscopy (Cesium-137, Europium-154)	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

3/11/10

J3

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B240J5	736 SOIL	3/11/10	0932	✓	✓	✓						

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Scales	3/11/10 1035	SSU #1	3/11/10 1035
SSU-1	MAR 15 2010 0800	R. D. Julian	MAR 15 2010 0800
R. D. Julian	MAR 15 2010 0930		MAR 15 2010 0930

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐☐** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP Metals - 6010B (TAL) {Sodium, Iron, Potassium, Calcium, Magnesium} ICP Metals - 6010B (Add-On) {Boron, Bismuth, Titanium, Lithium} ICP/MS - 200.8 (TAL) {Aluminum, Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Vanadium, Manganese, Nickel, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Molybdenum, Strontium, Thallium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} IC Anions - 300.0 {Phosphorus in phosphate, Chloride, Nitrogen in Nitrite, Fluoride, Nitrogen in Nitrate, Sulfate} Total Cyanide - 9014;
(2)Americium-241; Isotopic Plutonium {Plutonium-239/240} Isotopic Uranium {Uranium-238} Strontium-89,90 -- Total Sr; Technetium-99 {Technetium-99}

ORIGINAL

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

REVISION 1

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A-6003-618(01/06)

CH2MHill Plateau Remediation Company

3/30

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-060-010

COLLECTOR: KC Patterson CHPRC / SCALES	COMPANY CONTACT: BAMBERGER, MA	TELEPHONE NO.: 373-0880	PROJECT COORDINATOR: WIDRIG, DL	PRICE CODE: 8C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 216-8-3 Pond; C6962	PROJECT DESIGNATION: 200-CW-1 Model Group 5 Sampling - Large Area Ponds - Soil Sampling		SAF NO.: F10-060	AIR QUALITY: ☐	
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-507-5	ACTUAL SAMPLE DEPTH: 7-9'	COA: 302427ES10	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=Vegetation
W=Water
WI=Wipe
X=Other

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)

20100371

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	PRESERVATION			
				Cool-4C	None	None	
				TYPE OF CONTAINER			
				G	G/P	G/P	
				NO. OF CONTAINER(S)			
				1	1	1	
				VOLUME			
				60mL	125mL	60mL	
				SAMPLE ANALYSIS			
				SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Gamma Spectroscopy (Cesium-137, Europium-154)	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
B240J7	SOIL	3/11/10	1330	✓	✓	✓	N/A

W10GR00737 3/15/10

W10GR00737

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KC Patterson CHPRC	MAR 11 2010 1430	SSU-1	3-11-10 1430
SSU-1	MAR 15 2010 0900	R. D. Julian	MAR 15 2010 0900
R. D. Julian	MAR 15 2010 0930	[illegible]	MAR 15 2010 0930
[illegible]	3/15/10 1200	R.D. Julian	3/15/10 1200
R.D. Julian	3-15-10 1230	[illegible]	3-15-10 1230

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be distributed for use by the laboratory.☐☐** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1)ICP Metals - 6010B (TAL) {Sodium, Iron, Potassium, Calcium, Magnesium} ICP Metals - 6010B (Add-On) {Boron, Bismuth, Titanium, Lithium} ICP/MS - 200.8 (TAL) {Aluminum, Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver} ICP/MS - 200.8 (Add-on) {Arsenic, Lead, Molybdenum, Strontium, Thallium, Beryllium, Uranium, Selenium} 200.8_HG - ICPMS {Mercury} IC Anions - 300.0 {Phosphorus in phosphate, Chloride, Nitrogen in Nitrite, Fluoride, Nitrogen in Nitrate, Sulfate} Total Cyanide - 9014;
(2)Americium-241; Isotopic Plutonium {Plutonium-239/240} Isotopic Uranium {Uranium-238} Strontium-89,90 -- Total Sr; Technetium-99 {Technetium-99}

ORIGINAL

REVISION 1

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

A-6003-618(01/06)