0094498

WSCF Laboratory

RECEIVED MAY 12, 2010

REVISION 1

PO Box 1000 S3-30
Richland, WA 99352
(509) 373-7005
(509) 372-0456

Memorandum

To: Michael Neely
CH2M-HILL PRC
PO Box 1600
Richland, WA 99352

Date: May 11, 2010

From: WSCF Laboratory
WSCF Analytical Chemistry

CC:

Subject: REVISED90558 - 245507 [Report ID: 90558]

Reference: (1) SOW, Mod 2, #36587, Release 3
(2) HNF-SD-CD-QAPP-017, Rev 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following information for sample delivery group WSCF90558

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

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Electronically signed by Bill Baird
For Lab Manager

Attachments 4

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF90558
Data Deliverable Date 07/11/09

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
I09-036	B20D52	90558001	WATER	05/27/09	05/27/09
I09-036	B20D55	90558002	WATER	05/27/09	05/27/09
I09-036	B20D53	90558003	WATER	05/27/09	05/27/09
I09-036	B20D56	90558004	WATER	05/27/09	05/27/09

ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Attachment 2
Narrative, Rev.1
WSCF90558

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

Introduction

Four (4) groundwater samples were received at the WSCF Laboratory on May 27, 2009. 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 # WSCF90558 is included with this case narrative.

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*, pages 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. Analytical Note(s):

- Nitrite – Matrix Spike and Matrix Spike Duplicate recoveries exceeded established laboratory limits. Affected sample results in this batch were N flagged.

All other QC controls are within the established limits.

Attachment 2
Narrative, Rev.1
WSCF90558

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. Analytical Note(s):

- Batch QC analyzed on sample# B20HF1
  - Calcium, Magnesium and Sodium – exceeded spiking levels by a factor of 4. Spike recoveries are not valid. Check standard was analyzed to ensure linearity for those sample results that were greater than the calibration standard.
- Batch QC analyzed on sample# B20D58
  - Silver contamination detected in the Blank was evaluated and affected sample results in this batch were C flagged.
  - Calcium, Magnesium and Sodium – exceeded spiking levels by a factor of 4. Spike recoveries are not valid. Check standard was analyzed to ensure linearity for those sample results that were greater than the calibration standard.

All other QC controls are within the established limits.

Total Alkalinity – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

All QC controls are within the established limits.

Total Organic Carbon – 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. Analytical Note(s):

All 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 electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

Attachment 2
Narrative, Rev.1
WSCF90558

Problem and Discrepancy Report

WSCF

SDG WSCF90558

1. **The data package has the following issues:**

a) Case narrative, page 5 of 40, Anions – Remove analytical comment "See pages for QC details."

Resolution: *Provide correction.*

Lab Response: Narrative comment was removed.

b) Case narrative, page 6 of 40, ICP-AES Metals – Two analytical comments "sample concentration exceeded established laboratory limits by a factor of 4" should be modified to say "sample concentrations exceeded spiking levels by a factor of 4.

Resolution: *Provide correction.*

Lab Response: The narrative comments were revised.

c) Case narrative, page 6 of 40, Total Organic Carbon – TYPO, change "Method Spike" to "Laboratory Control Sample"

Resolution: *Provide correction.*

Lab Response: The narrative comment was revised.

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

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 30 pages
Including cover page

REVISION 1

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Michael Neely

Contract #	MOA-FH-CHPRC-2008
Group #	WSCF90558
Report Date	May 11, 2010

Analytical: Electronically signed by Bill Baird

Client Services: Electronically signed by Joseph Hale

All radiochemistry results are reported on an "as received" basis.

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.

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF90558

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
45633	45633	2	BLANK	9209	BLANK		Anions by Ion Chromatography (Water)
45633	45633	3	LCS	9210	LCS		Anions by Ion Chromatography (Water)
45633	45633	6	DUP	9211	B20D59(90564004DUP)	90564004	Anions by Ion Chromatography (Water)
45633	45633	7	MS	9212	B20D59(90564004MS)	90564004	Anions by Ion Chromatography (Water)
45633	45633	8	MSD	9213	B20D59(90564004MSD)	90564004	Anions by Ion Chromatography (Water)
45633	45633	12	SAMPLE	90558004	B20D56		Anions by Ion Chromatography (Water)
45633	45633	13	SAMPLE	90558003	B20D53		Anions by Ion Chromatography (Water)
52843	53194	1	BLANK	9566	BLANK		ICP-6010 - All possible metals
52843	53194	2	LCS	9567	LCS		ICP-6010 - All possible metals
52843	53194	4	MS	9568	B20HF1(90542001MS)	90542001	ICP-6010 - All possible metals
52843	53194	5	MSD	9569	B20HF1(90542001MSD)	90542001	ICP-6010 - All possible metals
52843	53194	21	SAMPLE	90558001	B20D52		ICP-6010 - All possible metals
52843	53194	22	SAMPLE	90558002	B20D55		ICP-6010 - All possible metals
52844	53201	1	BLANK	9570	BLANK		ICP-6010 - All possible metals
52844	53201	2	LCS	9571	LCS		ICP-6010 - All possible metals
52844	53201	4	MS	9572	B20D58(90564003MS)	90564003	ICP-6010 - All possible metals
52844	53201	5	MSD	9573	B20D58(90564003MSD)	90564003	ICP-6010 - All possible metals
52844	53201	23	SAMPLE	90558003	B20D53		ICP-6010 - All possible metals
52844	53201	24	SAMPLE	90558004	B20D56		ICP-6010 - All possible metals

Batch QC List

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
51837	51837	1	LCS	9492	LCS		Total Alkalinity as mg/L CaCO3 (Water)
51837	51837	2	SAMPLE	90558004	B20D56		Total Alkalinity as mg/L CaCO3 (Water)
51837	51837	3	DUP	9493	B20D56(90558004DUP)	90558004	Total Alkalinity as mg/L CaCO3 (Water)
51837	51837	4	SAMPLE	90558003	B20D53		Total Alkalinity as mg/L CaCO3 (Water)
51837	51837	13	LCS	9494	LCS		Total Alkalinity as mg/L CaCO3 (Water)
53054	53054	2	BLANK	9750	BLANK		Total Organic Carbon
53054	53054	3	LCS	9751	LCS		Total Organic Carbon
53054	53054	4	MS	9752	B20J01(90572013MS)	90572013	Total Organic Carbon
53054	53054	5	MSD	9753	B20J01(90572013MSD)	90572013	Total Organic Carbon
53054	53054	7	SAMPLE	90558003	B20D53		Total Organic Carbon
53054	53054	10	SAMPLE	90558004	B20D56		Total Organic Carbon

Method Reference

Attention Michael Neely
Department Inorganic

Group # WSCF90558

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, industry methods or HEIS 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 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	Elemental Analysis by ICP Atomic Emission Spectroscopy (ICP-AES)		
	EPA SW-846	6010C	Inductively Coupled Plasma-Atomic Emmision Spectrometry
	HEIS	6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
LA-533-410	Anion Analysis by Ion Chromatography		
	EPA-600/R-94-111	300.0	Determination of Inorganic Anions by Ion Chromatography
	HEIS	300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at http://www7.rl.gov/rapidweb/AS-DOL/index.cfm

Method Reference

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

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, industry methods or HEIS 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 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-344-406	Total Organic Carbon (TOC) Based on SW-846		
	EPA SW-846	9060	Total Organic Carbon
	HEIS	9060_TOC	Total Organic Carbon
LA-531-411	Alkalinity		
	EPA-600/4-79-020	310.1	Alkalinity
	HEIS	2320_ALKALINITY	Alkalinity

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at http://www7.rl.gov/rapidweb/AS-DOL/index.cfm

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558001
SAF# I09-036
Sample ID B20D52

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**06/03/09**
ICP-AES										
Iron	7439-89-6	LA-505-411	U	<18		ug/L	1	18	90	06/10/09
Magnesium	7439-95-4	LA-505-411		19400		ug/L	1	16	80	06/10/09
Manganese	7439-96-5	LA-505-411		485		ug/L	1	4.0	20	06/10/09
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Potassium	7440-09-7	LA-505-411		4310		ug/L	1	55	280	06/10/09
Silver	7440-22-4	LA-505-411	U	<5.0		ug/L	1	5.0	25	06/10/09
Sodium	7440-23-5	LA-505-411		12800		ug/L	1	23	85	06/10/09
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	06/10/09
Barium	7440-39-3	LA-505-411		63.6		ug/L	1	4.0	20	06/10/09
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Chromium	7440-47-3	LA-505-411	U	<13		ug/L	1	13	65	06/10/09
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Vanadium	7440-62-2	LA-505-411	U	<12		ug/L	1	12	60	06/10/09
Zinc	7440-66-6	LA-505-411	U	<6.0		ug/L	1	6.0	20	06/10/09
Calcium	7440-70-2	LA-505-411		2.09E5		ug/L	1	39	200	06/10/09
Strontium	7440-24-6	LA-505-411		731		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558001
SAF# I09-036
Sample ID B20D52

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558002
SAF# I09-036
Sample ID B20D55

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**06/03/09**
ICP-AES										
Iron	7439-89-6	LA-505-411	B	50.0		ug/L	1	18	90	06/10/09
Magnesium	7439-95-4	LA-505-411		14400		ug/L	1	16	80	06/10/09
Manganese	7439-96-5	LA-505-411		694		ug/L	1	4.0	20	06/10/09
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Potassium	7440-09-7	LA-505-411		3900		ug/L	1	55	280	06/10/09
Silver	7440-22-4	LA-505-411	U	<5.0		ug/L	1	5.0	25	06/10/09
Sodium	7440-23-5	LA-505-411		9940		ug/L	1	23	85	06/10/09
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	06/10/09
Barium	7440-39-3	LA-505-411		52.1		ug/L	1	4.0	20	06/10/09
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Chromium	7440-47-3	LA-505-411	U	<13		ug/L	1	13	65	06/10/09
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Vanadium	7440-62-2	LA-505-411	U	<12		ug/L	1	12	60	06/10/09
Zinc	7440-66-6	LA-505-411	U	<6.0		ug/L	1	6.0	20	06/10/09
Calcium	7440-70-2	LA-505-411		1.53E5		ug/L	1	39	200	06/10/09
Strontium	7440-24-6	LA-505-411		452		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558002
SAF# I09-036
Sample ID B20D55

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
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U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558003
SAF# I09-036
Sample ID B20D53

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**05/27/09**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	UD	<0.15		ug/mL	5	0.15	1.0	05/27/09
Chloride	16887-00-6	LA-533-410	D	8.74		ug/mL	5	0.22	2.0	05/27/09
Nitrite-N	NO2-N	LA-533-410	UDN	<0.090		ug/mL	5	0.090	0.50	05/27/09
Nitrate-N	NO3-N	LA-533-410	UD	<0.16		ug/mL	5	0.16	0.50	05/27/09
Sulfate	14808-79-8	LA-533-410	D	244		ug/mL	5	0.33	5.0	05/27/09
ICP Prep										**06/03/09**
ICP-AES										
Iron	7439-89-6	LA-505-411	B	57.1		ug/L	1	18	90	06/10/09
Magnesium	7439-95-4	LA-505-411		20200		ug/L	1	16	80	06/10/09
Manganese	7439-96-5	LA-505-411		473		ug/L	1	4.0	20	06/10/09
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Potassium	7440-09-7	LA-505-411		4530		ug/L	1	55	280	06/10/09
Silver	7440-22-4	LA-505-411	B1	5.50		ug/L	1	5.0	25	06/10/09
Sodium	7440-23-5	LA-505-411		13800		ug/L	1	23	85	06/10/09
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	06/10/09
Barium	7440-39-3	LA-505-411		64.1		ug/L	1	4.0	20	06/10/09
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558003
SAF# I09-036
Sample ID B20D53

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Chromium	7440-47-3	LA-505-411	U	<13		ug/L	1	13	65	06/10/09
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Vanadium	7440-62-2	LA-505-411	U	<12		ug/L	1	12	60	06/10/09
Zinc	7440-66-6	LA-505-411	U	<6.0		ug/L	1	6.0	20	06/10/09
Calcium	7440-70-2	LA-505-411		2.00E5		ug/L	1	39	200	06/10/09
Strontium	7440-24-6	LA-505-411		739		ug/L	1	4.0	20	06/10/09
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
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U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558004
SAF# I09-036
Sample ID B20D56

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**05/27/09**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	BD	0.261		ug/mL	2	0.060	0.40	05/27/09
Chloride	16887-00-6	LA-533-410	D	15.3		ug/mL	2	0.086	0.80	05/27/09
Nitrite-N	NO2-N	LA-533-410	UDN	<0.036		ug/mL	2	0.036	0.20	05/27/09
Nitrate-N	NO3-N	LA-533-410	UD	<0.062		ug/mL	2	0.062	0.20	05/27/09
Sulfate	14808-79-8	LA-533-410	D	39.7		ug/mL	2	0.13	2.0	05/27/09
ICP Prep										**06/03/09**
ICP-AES										
Iron	7439-89-6	LA-505-411	B	79.9		ug/L	1	18	90	06/10/09
Magnesium	7439-95-4	LA-505-411		14400		ug/L	1	16	80	06/10/09
Manganese	7439-96-5	LA-505-411		690		ug/L	1	4.0	20	06/10/09
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Potassium	7440-09-7	LA-505-411		3910		ug/L	1	55	280	06/10/09
Silver	7440-22-4	LA-505-411	U	<5.0		ug/L	1	5.0	25	06/10/09
Sodium	7440-23-5	LA-505-411		9930		ug/L	1	23	85	06/10/09
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	06/10/09
Barium	7440-39-3	LA-505-411		52.7		ug/L	1	4.0	20	06/10/09
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Sample # 90558004
SAF# I09-036
Sample ID B20D56

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Chromium	7440-47-3	LA-505-411	U	<13		ug/L	1	13	65	06/10/09
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09
Vanadium	7440-62-2	LA-505-411	U	<12		ug/L	1	12	60	06/10/09
Zinc	7440-66-6	LA-505-411	U	<6.0		ug/L	1	6.0	20	06/10/09
Calcium	7440-70-2	LA-505-411		1.52E5		ug/L	1	39	200	06/10/09
Strontium	7440-24-6	LA-505-411		454		ug/L	1	4.0	20	06/10/09
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	06/10/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED90558 -

WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

Sample # 90558003
SAF# I09-036
Sample ID B20D53

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alkalinity										**06/02/09**
Alkalinity										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		280		mg/L	1	1	10	06/02/09
TOC										**06/05/09**
TOC										
Total Organic Carbon	TOC	LA-344-406	D	68.9		mg/L	20	6.0	20	06/05/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

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WSCF Analytical Results Report

REVISION 1

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

Sample # 90558004
SAF# I09-036
Sample ID B20D56

Matrix WATER
Sampled 05/27/09
Received 05/27/09

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alkalinity										**06/02/09**
Alkalinity										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		270		mg/L	1	1	10	06/02/09
TOC										**06/05/09**
TOC										
Total Organic Carbon	TOC	LA-344-406	D	116		mg/L	20	6.0	20	06/05/09

MDL = Minimum Detection
RQ = Result Qualifier
TP Err = Total Propagated
DF = Dilution Factor
+ - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

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Quality Control Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

QC Batch 45633
Associated Samples 90558003, 90558004

Test Anions by Ion Chromatography (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #9209**							
Fluoride	16984-48-8		<0.030	ug/mL					U	05/27/09
Chloride	16887-00-6		<0.043	ug/mL					U	05/27/09
Nitrite-N	NO2-N		<0.018	ug/mL					U	05/27/09
Nitrate-N	NO3-N		<0.031	ug/mL					U	05/27/09
Sulfate	14808-79-8		<0.066	ug/mL					U	05/27/09
LCS			**QC Sample #9210**							
Fluoride	16984-48-8		0.971	ug/mL	97.1	90 - 110				05/27/09
Chloride	16887-00-6		1.96	ug/mL	100.6	90 - 110				05/27/09
Nitrite-N	NO2-N		0.974	ug/mL	99.4	90 - 110				05/27/09
Nitrate-N	NO3-N		0.878	ug/mL	99.6	90 - 110				05/27/09
Sulfate	14808-79-8		3.89	ug/mL	99.2	90 - 110				05/27/09
DUP			**QC Sample #9211**							
			Original 90564004							
Fluoride	16984-48-8		0.178	ug/mL			2.30	20	BD	05/27/09
Chloride	16887-00-6		13.0	ug/mL			1.60	20	D	05/27/09
Nitrite-N	NO2-N		<0.036	ug/mL			0.00	20	UD	05/27/09
Nitrate-N	NO3-N		<0.062	ug/mL			0.00	20	UD	05/27/09
Sulfate	14808-79-8		25.7	ug/mL			0.80	20	D	05/27/09

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Quality Control Report

REVISION 1

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MS			**QC Sample #9212**							
			Original 90564004							
Fluoride	16984-48-8		0.991	ug/mL	98.1	80 - 120			D	05/27/09
Chloride	16887-00-6		1.80	ug/mL	91.5	80 - 120			D	05/27/09
Nitrite-N	NO2-N		1.21	ug/mL	122.2	80 - 120			DNX1	05/27/09
Nitrate-N	NO3-N		0.935	ug/mL	105.1	80 - 120			D	05/27/09
Sulfate	14808-79-8		4.37	ug/mL	110.2	80 - 120			D	05/27/09
MSD			**QC Sample #9213**							
			Original 90564004					**Paired**	**9212**	
Fluoride	16984-48-8		1.02	ug/mL	100.6	80 - 120	2.50	20	D	05/27/09
Chloride	16887-00-6		1.88	ug/mL	95.3	80 - 120	4.10	20	D	05/27/09
Nitrite-N	NO2-N		1.23	ug/mL	124.3	80 - 120	1.70	20	DNX1	05/27/09
Nitrate-N	NO3-N		0.935	ug/mL	105	80 - 120	0.10	20	D	05/27/09
Sulfate	14808-79-8		4.55	ug/mL	114.8	80 - 120	4.10	20	D	05/27/09

Quality Control Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

QC Batch 51837
Associated Samples 90558003, 90558004

Test Total Alkalinity as mg/L CaCO3 (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #9492**							
Total Alkalinity as CaCO3	ALKALINITY		82	mg/L	99.4	80 - 120				06/02/09
DUP			**QC Sample #9493**							
			Original 90558004							
Total Alkalinity as CaCO3	ALKALINITY	270	270	mg/L			0.00	20		06/02/09
LCS			**QC Sample #9494**							
Total Alkalinity as CaCO3	ALKALINITY		82	mg/L	100	80 - 120				06/02/09

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

QC Batch 52843
Associated Samples 90558001, 90558002

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #9566**						
Iron	7439-89-6		<18	ug/L				U	06/10/09
Magnesium	7439-95-4		<16	ug/L				U	06/10/09
Manganese	7439-96-5		<4.0	ug/L				U	06/10/09
Nickel	7440-02-0		<4.0	ug/L				U	06/10/09
Potassium	7440-09-7		<55	ug/L				U	06/10/09
Silver	7440-22-4		<5.0	ug/L				U	06/10/09
Sodium	7440-23-5		<23	ug/L				U	06/10/09
Antimony	7440-36-0		<38	ug/L				U	06/10/09
Barium	7440-39-3		<4.0	ug/L				U	06/10/09
Cadmium	7440-43-9		<4.0	ug/L				U	06/10/09
Chromium	7440-47-3		<13	ug/L				U	06/10/09
Cobalt	7440-48-4		<4.0	ug/L				U	06/10/09
Copper	7440-50-8		<4.0	ug/L				U	06/10/09
Vanadium	7440-62-2		<12	ug/L				U	06/10/09
Zinc	7440-66-6		<6.0	ug/L				U	06/10/09
Calcium	7440-70-2		<39	ug/L				U	06/10/09
Strontium	7440-24-6		<4.0	ug/L				U	06/10/09
Beryllium	7440-41-7		<4.0	ug/L				U	06/10/09

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #9567**							
Iron	7439-89-6		965	ug/L	96.5	80 - 120				06/10/09
Magnesium	7439-95-4		956	ug/L	95.6	80 - 120				06/10/09
Manganese	7439-96-5		1010	ug/L	101.4	80 - 120				06/10/09
Nickel	7440-02-0		1020	ug/L	101.9	80 - 120				06/10/09
Potassium	7440-09-7		10400	ug/L	103.8	80 - 120				06/10/09
Silver	7440-22-4		992	ug/L	99.2	80 - 120				06/10/09
Sodium	7440-23-5		1020	ug/L	101.8	80 - 120				06/10/09
Antimony	7440-36-0		1010	ug/L	101.4	80 - 120				06/10/09
Barium	7440-39-3		501	ug/L	100.2	80 - 120				06/10/09
Cadmium	7440-43-9		1050	ug/L	105.4	80 - 120				06/10/09
Chromium	7440-47-3		986	ug/L	98.6	80 - 120				06/10/09
Cobalt	7440-48-4		999	ug/L	99.9	80 - 120				06/10/09
Copper	7440-50-8		1020	ug/L	102.3	80 - 120				06/10/09
Vanadium	7440-62-2		989	ug/L	98.9	80 - 120				06/10/09
Zinc	7440-66-6		1020	ug/L	102.2	80 - 120				06/10/09
Calcium	7440-70-2		842	ug/L	84.2	80 - 120				06/10/09
Strontium	7440-24-6		508	ug/L	101.7	80 - 120				06/10/09
Beryllium	7440-41-7		533	ug/L	106.6	80 - 120				06/10/09
MS			**QC Sample #9568**							
			Original 90542001							
Iron	7439-89-6		984	ug/L	98.4	75 - 125				06/10/09
Magnesium	7439-95-4		1330	ug/L	133	75 - 125				06/10/09
Manganese	7439-96-5		1000	ug/L	100.5	75 - 125				06/10/09

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Nickel	7440-02-0		976	ug/L	97.6	75 - 125				06/10/09
Potassium	7440-09-7		9890	ug/L	98.9	75 - 125				06/10/09
Silver	7440-22-4		973	ug/L	97.3	75 - 125				06/10/09
Sodium	7440-23-5		1590	ug/L	159	75 - 125				06/10/09
Antimony	7440-36-0		983	ug/L	98.3	75 - 125				06/10/09
Barium	7440-39-3		503	ug/L	100.6	75 - 125				06/10/09
Cadmium	7440-43-9		1010	ug/L	101.1	75 - 125				06/10/09
Chromium	7440-47-3		979	ug/L	97.9	75 - 125				06/10/09
Cobalt	7440-48-4		967	ug/L	96.7	75 - 125				06/10/09
Copper	7440-50-8		977	ug/L	97.7	75 - 125				06/10/09
Vanadium	7440-62-2		968	ug/L	96.8	75 - 125				06/10/09
Zinc	7440-66-6		992	ug/L	99.2	75 - 125				06/10/09
Calcium	7440-70-2		1980	ug/L	198	75 - 125				06/10/09
Strontium	7440-24-6		525	ug/L	105	75 - 125				06/10/09
Beryllium	7440-41-7		516	ug/L	103.1	75 - 125				06/10/09
MSD			**QC Sample #9569**							
			Original 90542001						**Paired 9568**	
Iron	7439-89-6		937	ug/L	93.7	75 - 125	4.90	20		06/10/09
Magnesium	7439-95-4		980	ug/L	98	75 - 125	30.30	20	*	06/10/09
Manganese	7439-96-5		972	ug/L	97.2	75 - 125	3.30	20		06/10/09
Nickel	7440-02-0		944	ug/L	94.4	75 - 125	3.30	20		06/10/09
Potassium	7440-09-7		9330	ug/L	93.3	75 - 125	5.80	20		06/10/09
Silver	7440-22-4		939	ug/L	93.9	75 - 125	3.60	20		06/10/09
Sodium	7440-23-5		870	ug/L	87	75 - 125	58.50	20	*	06/10/09
Antimony	7440-36-0		996	ug/L	99.6	75 - 125	1.30	20		06/10/09

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Barium	7440-39-3		485	ug/L	97.1	75 - 125	3.50	20		06/10/09
Cadmium	7440-43-9		981	ug/L	98.1	75 - 125	3.00	20		06/10/09
Chromium	7440-47-3		939	ug/L	93.9	75 - 125	4.20	20		06/10/09
Cobalt	7440-48-4		931	ug/L	93.1	75 - 125	3.80	20		06/10/09
Copper	7440-50-8		938	ug/L	93.8	75 - 125	4.10	20		06/10/09
Vanadium	7440-62-2		947	ug/L	94.7	75 - 125	2.20	20		06/10/09
Zinc	7440-66-6		954	ug/L	95.4	75 - 125	3.90	20		06/10/09
Calcium	7440-70-2		1420	ug/L	142	75 - 125	32.90	20	*	06/10/09
Strontium	7440-24-6		498	ug/L	99.6	75 - 125	5.30	20		06/10/09
Beryllium	7440-41-7		499	ug/L	99.8	75 - 125	3.30	20		06/10/09

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

QC Batch 52844
Associated Samples 90558003, 90558004

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #9570**							
Iron	7439-89-6		<18	ug/L					U	06/10/09
Magnesium	7439-95-4		<16	ug/L					U	06/10/09
Manganese	7439-96-5		<4.0	ug/L					U	06/10/09
Nickel	7440-02-0		<4.0	ug/L					U	06/10/09
Potassium	7440-09-7		<55	ug/L					U	06/10/09
Silver	7440-22-4		5.50	ug/L					B	06/10/09
Sodium	7440-23-5		<23	ug/L					U	06/10/09
Antimony	7440-36-0		<38	ug/L					U	06/10/09
Barium	7440-39-3		<4.0	ug/L					U	06/10/09
Cadmium	7440-43-9		<4.0	ug/L					U	06/10/09
Chromium	7440-47-3		<13	ug/L					U	06/10/09
Cobalt	7440-48-4		<4.0	ug/L					U	06/10/09
Copper	7440-50-8		<4.0	ug/L					U	06/10/09
Vanadium	7440-62-2		<12	ug/L					U	06/10/09
Zinc	7440-66-6		<6.0	ug/L					U	06/10/09
Calcium	7440-70-2		<39	ug/L					U	06/10/09
Strontium	7440-24-6		<4.0	ug/L					U	06/10/09
Beryllium	7440-41-7		<4.0	ug/L					U	06/10/09

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #9571**							
Iron	7439-89-6		961	ug/L	96.1	80 - 120				06/10/09
Magnesium	7439-95-4		957	ug/L	95.7	80 - 120				06/10/09
Manganese	7439-96-5		996	ug/L	99.6	80 - 120				06/10/09
Nickel	7440-02-0		999	ug/L	99.9	80 - 120				06/10/09
Potassium	7440-09-7		10400	ug/L	104.1	80 - 120				06/10/09
Silver	7440-22-4		980	ug/L	98	80 - 120				06/10/09
Sodium	7440-23-5		1030	ug/L	103.1	80 - 120				06/10/09
Antimony	7440-36-0		1040	ug/L	104	80 - 120				06/10/09
Barium	7440-39-3		490	ug/L	97.9	80 - 120				06/10/09
Cadmium	7440-43-9		1030	ug/L	103.4	80 - 120				06/10/09
Chromium	7440-47-3		968	ug/L	96.8	80 - 120				06/10/09
Cobalt	7440-48-4		984	ug/L	98.4	80 - 120				06/10/09
Copper	7440-50-8		1020	ug/L	102.1	80 - 120				06/10/09
Vanadium	7440-62-2		979	ug/L	97.9	80 - 120				06/10/09
Zinc	7440-66-6		1010	ug/L	101.2	80 - 120				06/10/09
Calcium	7440-70-2		815	ug/L	81.5	80 - 120				06/10/09
Strontium	7440-24-6		501	ug/L	100.3	80 - 120				06/10/09
Beryllium	7440-41-7		527	ug/L	105.4	80 - 120				06/10/09
MS			**QC Sample #9572**							
			Original 90564003							
Iron	7439-89-6		976	ug/L	97.6	75 - 125				06/10/09
Magnesium	7439-95-4		730	ug/L	73	75 - 125				06/10/09
Manganese	7439-96-5		1020	ug/L	101.8	75 - 125				06/10/09

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Nickel	7440-02-0		925	ug/L	92.5	75 - 125				06/10/09
Potassium	7440-09-7		9300	ug/L	93	75 - 125				06/10/09
Silver	7440-22-4		958	ug/L	95.8	75 - 125				06/10/09
Sodium	7440-23-5		670	ug/L	67	75 - 125				06/10/09
Antimony	7440-36-0		966	ug/L	96.6	75 - 125				06/10/09
Barium	7440-39-3		489	ug/L	97.7	75 - 125				06/10/09
Cadmium	7440-43-9		987	ug/L	98.7	75 - 125				06/10/09
Chromium	7440-47-3		940	ug/L	94	75 - 125				06/10/09
Cobalt	7440-48-4		923	ug/L	92.3	75 - 125				06/10/09
Copper	7440-50-8		955	ug/L	95.5	75 - 125				06/10/09
Vanadium	7440-62-2		948	ug/L	94.8	75 - 125				06/10/09
Zinc	7440-66-6		962	ug/L	96.2	75 - 125				06/10/09
Calcium	7440-70-2		5100	ug/L	510	75 - 125				06/10/09
Strontium	7440-24-6		493	ug/L	98.5	75 - 125				06/10/09
Beryllium	7440-41-7		499	ug/L	99.8	75 - 125				06/10/09
MSD			**QC Sample #9573**							
			Original 90564003						**Paired 9572**	
Iron	7439-89-6		944	ug/L	94.4	75 - 125	3.30	20		06/10/09
Magnesium	7439-95-4		2180	ug/L	218	75 - 125	99.70	20	*	06/10/09
Manganese	7439-96-5		996	ug/L	99.6	75 - 125	2.20	20		06/10/09
Nickel	7440-02-0		883	ug/L	88.3	75 - 125	4.60	20		06/10/09
Potassium	7440-09-7		9650	ug/L	96.5	75 - 125	3.70	20		06/10/09
Silver	7440-22-4		934	ug/L	93.4	75 - 125	2.50	20		06/10/09
Sodium	7440-23-5		1460	ug/L	146	75 - 125	74.20	20	*	06/10/09
Antimony	7440-36-0		982	ug/L	98.2	75 - 125	1.60	20		06/10/09

REVISED90558 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF90558

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Barium	7440-39-3		481	ug/L	96.1	75 - 125	1.70	20		06/10/09
Cadmium	7440-43-9		955	ug/L	95.5	75 - 125	3.30	20		06/10/09
Chromium	7440-47-3		896	ug/L	89.6	75 - 125	4.80	20		06/10/09
Cobalt	7440-48-4		873	ug/L	87.3	75 - 125	5.60	20		06/10/09
Copper	7440-50-8		939	ug/L	93.9	75 - 125	1.70	20		06/10/09
Vanadium	7440-62-2		916	ug/L	91.6	75 - 125	3.40	20		06/10/09
Zinc	7440-66-6		922	ug/L	92.2	75 - 125	4.20	20		06/10/09
Calcium	7440-70-2		7000	ug/L	700	75 - 125	31.40	20	*	06/10/09
Strontium	7440-24-6		511	ug/L	102.1	75 - 125	3.60	20		06/10/09
Beryllium	7440-41-7		481	ug/L	96.2	75 - 125	3.70	20		06/10/09

REVISION 1

Quality Control Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF90558

QC Batch 53054
Associated Samples 90558003, 90558004

Test Total Organic Carbon

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #9750**							
Total Organic Carbon	TOC		<0.045	mg/L					U	06/05/09
LCS			**QC Sample #9751**							
Total Organic Carbon	TOC		2.03	mg/L	101.3	80 - 120				06/05/09
MS			**QC Sample #9752**							
			Original 90572013							
Total Organic Carbon	TOC		2.03	mg/L	101.6	75 - 125				06/05/09
MSD			**QC Sample #9753**							
			Original 90572013					**Paired**	**9752**	
Total Organic Carbon	TOC		1.94	mg/L	97.2	75 - 125	4.40	20		06/05/09

Attention: Michael Neely **Group #** WSCF90558

90558001 **B20D52**

ICP-AES: High/Check standard used to ensure linearity due to sample results exceeding the calibration standard for the following elements: magnesium, sodium, and calcium.
ICP-AES: The following elements sample concentraton exceed spiking level by a factor of 4. Spike recoveries are not valid: magnesium, sodium, and calcium.

90558002 **B20D55**

ICP-AES: High/Check standard used to ensure linearity due to sample results exceeding the calibration standard for the following elements: magnesium and calcium.
ICP-AES: The following elements sample concentraton exceed spiking level by a factor of 4. Spike recoveries are not valid: magnesium, sodium, and calcium.

90558003 **B20D53**

ICP-AES: High/Check standard used to ensure linearity due to sample results exceeding the calibration standard for the following elements: magnesium, sodium, and calcium.
ICP-AES: The following elements sample concentraton exceed spiking level by a factor of 4. Spike recoveries are not valid: magnesium, sodium, and calcium.

Department Inorganic

Analyte Silver - ICP-6010 - All possible metals
[1] Contamination was detected in the blank and affected sample associated QC blank, and the sample concentration was <= 5X the blank concentration

90558004 **B20D56**

ICP-AES: High/Check standard used to ensure linearity due to sample results exceeding the calibration standard for the following elements: magnesium and calcium.

Analytical Comment Report

REVISION 1

Attention: Michael Neely

Group # WSCF90558

ICP-AES: The following elements sample concentraton
exceed spiking level by a factor of 4. Spike recoveries
are not valid: magnesium, sodium, and calcium.

Quality Control Comments

Department Inorganic

9212 B20D59(90564004MS)

Analyte Nitrite-N - Anions by Ion Chromatography (Water)

[1] IC Anion - Unknown peak interference with nitrite-N possibly responsible for out of limits MS %R. DTS

9213 B20D59(90564004MSD)

Analyte Nitrite-N - Anions by Ion Chromatography (Water)

[1] IC Anion - Unknown peak interference with nitrite-N possible cause for out of limit MSD %R. DTS

ATTACHMENT 4

SAMPLE RECEIPT

Consisting of 4 pages
Including cover page

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

ACKNOWLEDGEMENT OF SAMPLES RECEIVED

WSCF Laboratory
PO Box 1000 S3-30
Richland, WA 99352

ATTN: Michael Neely

Customer Code:	CHPRC
PO #:	131280
Work Order #:	90558
Profile #:	I09-036-21
Proj. Mgr.:	
Phone:	

The following samples were received from you on 5/27/2009 1:15:00 PM. 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	Matrix	Collected	Received
		Tests scheduled		
90558001	B20D52	WATER	5/27/2009 12:17	5/27/2009 13:15
		6010-W		
90558002	B20D55	WATER	5/27/2009 10:51	5/27/2009 13:15
		6010-W		
90558003	B20D53	WATER	5/27/2009 12:17	5/27/2009 13:15
		6010-W; ALK-W; IC-W; TOC-W		
90558004	B20D56	WATER	5/27/2009 10:51	5/27/2009 13:15
		6010-W; ALK-W; IC-W; TOC-W		

Test Acronym Description

Test Acronym	Description
6010-W	ICP-AES (W)
ALK-W	Total Alkalinity (W)
IC-W	Anions by IC (W)
TOC-W	Total Organic Carbon (W)

CHPRC	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 90558	C.O.C. # 109-036-21 Page 1 of 1

Collector: CJ Woehle CHPRC	Contact/Requester: Dana Widner	Telephone No.: 509-372-2858 MSIN FAX
SAF No.: 109-036	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: 100K/R/AM(1/2) MAY 2009	HNF-N-506- 24 / 15	Ice Chest No.: SML-313 Temp.
Shipped To (Lab): Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS Hold Time — Total Activity Exemption: Yes ☑ No ☐
100 Area Generate Knowledge Information form applies

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
E20D52 (F)	001	W	5-27-09	1217	1x500-mL G/P	6010_METALS_ICP: List-3 (16)	6 Months	HNO3 to pH <2
E20D53	003	W			1x500-mL G/P	6010_METALS_ICP: List-3 (16)	6 Months	HNO3 to pH <2
E20D53		W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
E20D53		W			1x500-mL P	300.0_ANIONS_IC: List-1 (5)	28 Days/48 Hours	Cool~4C
E20D53		W	5-27-09	1217	1x250-mL aGs*	9060_TOC: TOC (1)	28 Days	HCl or H2SO4 to pH <2 Cool~4C

ICED

5-27-09

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
CJ Woehle CHPRC			MAY 27 2009 1315	Victor			MAY 27 2009 1315
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	Soil	DS	Drum Solid
SE	Sediment	DL	Drum Liquid
SO	Solid	T	Tissue
SL	Sludge	WI	Wood
W	Water		Liquid
O	Oil	V	Vegetation
A	Air	X	Other

Thursday, May 28, 2009 1:10:45 AM
Page 3 of 3

ChemWare

May 11, 2010 12:05:05

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Page 40 of 41

3004.1.1084.3
Report ID: 90558
Group # WSCF90558

CHPRC	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I09-036-25 Page 1 of 1

Collector: DJ Woehle CHPRC	Contact/Requester: Dana Walter	Telephone No. 509-376-2858 MSIN FAX
SAF No. 309 036	Sampling Origin: Hanford Site	Purchase Order/Charge Code
Project Title: (BORSHANKIN) MAY 2009	HNF N 506 2M / 15	Ice Chest No. SAL-313 Temp.
Shipped To/Lab: Waste Sampling & Characterization	Method of Shipment: Govt. Vehicle	Bill of Lading/Air Bill No.
Protocol: CERCLA	Priority: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS: " "

SPECIAL INSTRUCTIONS: Hold Time — 100 Area Generator Knowledge Information Form applies. Total Activity Exemption: Yes ☑ No ☐

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B20D55 (F)	002	W	5-27-09	1251	1x500-mL G/P	6010_METALS_ICP: List-3 (16)	6 Months	HNO3 to pH <2
B20D56	004	W			1x500-mL G/P	6010_METALS_ICP: List-3 (16)	6 Months	HNO3 to pH <2
B20D56		W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool-4C
B20D56		W			1x500-mL P	300.0_ANIONS_IC: List-1 (8)	28 Days/48 Hours	Cool-4C
B20D56		W	5-27-09	1251	1x250-mL aGs*	9060_TOC: TOC (1)	28 Days	HCl or H2SO4 to pH <2 Cool-4C

ICED

DJW 5-27-09

Relinquished By	Date/Time	Received By	Date/Time
DJ Woehle CHPRC	MAY 27 2009 1310		MAY 27 2009 1315
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Matrix *: S = Soil; SE = Sediment; SD = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solid; DL = Drum Liquid; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; X = Other