Rico Argentine_Waters_OCT 2014
TDF: A-048
1089

Due: 11/07/14
LIMS: C141006

1769943 - R8 SDMS

1089

TLF-05.05	SOP: QAQ-04.00	Eff. Date: 07/20/2012

ESAT Region 8

Data Package Completeness and Tracking Form

The attached data package has been reviewed for completeness for the following items by the ESAT Document Control Officer and the ESAT Region 8 Manager

LIMS: C141006	Project Name: Rico Argentine _ Waters _ OCT 2014
TDF: A-048	Due Date: 11/7/14

Data Package Deliverable Element	ESAT Mgmt. / DCO / QAQC Rev.	
ESAT Region 8 Final Report Review Form attached to this page	☒	Initials: AS
ESAT Region 8 Data Package Chain of Custody Form	☒	Initials: |
DCN	☒	Initials: |
LIMS Report	☒	Initials: |
MDL Forms for ICP-OE & ICP-MS	☒	Initials: |
Hardness Sample Calculation	☒	Initials: |
Sample Cross Reference	☒	Initials: |
Copy of Field COC & project TDF	☒	Initials: |
Case Narrative Reviewed	☐	Initials: ✓
CD-ROM: * EDD * LIMS Report * Standards COAs * Raw Data	☒	Initials: HS

Data Package Tracking

Destination	Date	Initials
Final Report Complete	12/5/14	HS
LIMS Tracking Updated	|	|
Package to ESAT Mgmt. For Approval		
Package to DCO for CD-ROM and EPA Delivery	12/5/14	✓
CD ROM Completed and Attached to Deliverable	12/10/14	HS
Package Delivered to EPA		
Signed DCN Returned	12/23/14	HS

Deliverable Submission and Evaluation Form

EPA Region 8 ESAT

Contractor: TechLaw | Updated: 10/28/13 | Contract No: EP-W-13-028

Submission Information (to be completed by ESAT):

Task Order: 0002 - Analytical Support and Data Validation					
DCN:	EP8 - 2 - 1089				
TDF:	A048	Line Item:	All	TDF Status:	In Progress
Submission Date: 12/5/2014					
Submitted By: Holly Sprunger, ESAT Environmental Scientist					
Deliverable Description:					
Rico Argentine_Waters_OCT 2014					
Submitter Comments:					
Hardcopy Data Report and Hardcopy Raw Data + CD-ROM with Data Report .pdf, Scribe EXCEL EDD, and Raw Data .pdf					

Evaluation Information (to be completed by EPA):

Review Date:	12/23/14
Reviewed by:	[illegible]
Evaluation:	☑ This deliverable is considered acceptable.
	☐ This deliverable requires revisions as noted below or per attached.
Evaluation Comments:	
Completeness Check	

TLF-07.01	SOP: QAQ-04.00	Eff. Date: 1/17/2007

ESAT Region 8

Final Report Review Form

LIMS: C14/006	Project: Rio Argentine Waters - Oct 2014
TDF: A-048	Due Date: 11/7/2014

QA/QC Review – Level III

Compare TDF to performed analysis / Ensure all analyses are complete	☒ Yes	☐ No
Review each Analytical Data Review form noting discrepancies for narrative	☒ Yes	☐ No
Examine each analytical sequence in LIMS using Data Entry Review application	☒ Yes	☐ No
Generate draft report, print QC section	☒ Yes	☐ No
Confirm presence of each analytical batch, QC samples	☒ Yes	☐ No
Examine analytical results (Form I) for accuracy and completeness	☒ Yes	☐ No
Check spike recoveries of LCSs, matrix spikes and post-digestion spikes	☒ Yes	☐ No
Verify serial dilution %D and duplicate RPD for each metals batch	☒ Yes	☐ No

Narrative Comments

None.

Review By: [signature]	Date: 12/4/2014

ESAT Management Review – Level IV

All analytical data and deliverable review forms present and complete	☑ Yes	☐ No
COC copy, received temp. noted, preservatives noted, signature present, holding times met	☑ Yes	☐ No
Copy of TDF present, Analytical requirements met	☑ Yes	☐ No
Case narrative checked for spelling, grammar, technical content and completeness	☑ Yes	☐ No
10% Validation of raw data to reported data on Form Ones	☑ Yes	☐ No
Standard Traceability COAs and ICP / ICP-MS MDL forms present	☑ Yes	☐ No
Final Report cover letter including DCN present	☑ Yes	☐ No
Deficiencies noted requiring correction before delivery to EPA Project Officer	☑ Yes	☐ No

Manager Review Comments

None.

Review By: [signature]	Date: 12/5/14
Corrections By:	Date:

WORK ORDER

Printed: 10/9/2014 12:31:01PM

C141006

TechLaw, Inc. - ESAT Region 8

Client:	Superfund	Project Manager:	Scott VanOvermeiren
Project:	Rico-Argentine_Waters_OCT 2014_A048	Project Number:	A-048

Report To:
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone: (303) 312-7720
Fax: (303) 312-7801

Invoice To:
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone :(303) 312-7720
Fax: (303) 312-7801

Date Due:	11/07/14 00:00 (30 day TAT)		
Received By:	Laura Wilson	Date Received:	10/08/14 08:45
Logged In By:	Laura Wilson	Date Logged In:	10/09/14 12:19

Samples Received at:	5.9°C		
Custody Seals	No	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confin	Yes		

Analysis	Due	TAT	Expires	Comments
C141006-01 AC2EFF [Water] Sampled 10/07/14 ~~09:45~~ 9:35 Dateline				
Total Recoverable Metals	10/29/14 00:00	21	04/05/15 15:45	
C141006-02 AC2EFF [Water] Sampled 10/07/14 09:45 9:35 Dateline				
Dissolved Metals + Hardness	10/29/14 00:00	21	04/05/15 15:45	
C141006-03 FDB [Water] Sampled 10/07/14 09:30 Dateline				
Total Recoverable Metals	10/29/14 00:00	21	04/05/15 15:30	
C141006-04 FDB [Water] Sampled 10/07/14 09:30 Dateline				
Dissolved Metals + Hardness	10/29/14 00:00	21	04/05/15 15:30	

WORK ORDER

Printed: 10/9/2014 12:31:01PM

C141006

TechLaw, Inc. - ESAT Region 8

Client:	Superfund	Project Manager:	Scott VanOvermeiren
Project:	Rico-Argentine_Waters_OCT 2014_A048	Project Number:	A-048

Analysis	Due	TAT	Expires	Comments
C141006-05 RDEFF [Water] Sampled 10/07/14 ~~09:30~~ 09:45 Dateline				
Total Recoverable Metals	10/29/14 00:00	21	04/05/15 15:30	
C141006-06 RDEFF [Water] Sampled 10/07/14 09:30 09:45 Dateline				
Dissolved Metals + Hardness	10/29/14 00:00	21	04/05/15 15:30	

Analysis groups included in this work order

Dissolved Metals + Hardness

ICPOE Diss. Metals ICPMS Diss. Metals DM-Hardness - Calculated

Total Recoverable Metals

ICPOE Tot. Rec. Metals ICPMS Tot. Rec. Metals

Reviewed By Date

USEPA
DateShipped:
CarrierName:
AirbillNo:

CHAIN OF CUSTODY RECORD
Rico Argentine St. Louis Tunne/CO
Contact Name: Elliott Petri
Contact Phone: 719-216-2754

No: 8-100714-210859-0003
Cooler #:
Lab: ESAT
Lab Phone: 303-312-7798

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	AC2EFF	Verticl Flow - Outfall	Total Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	
	AC2EFF	Verticl Flow - Outfall	Dissolved Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	
	FDB	Flow Distrobution Box - Influent	Total Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	
	FDB	Flow Distrobution Box - Influent	Dissolved Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	
	RDEFF	Horizontal Wetland - Outfall Rock Drain	Total Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	
	RDEFF	Horizontal Wetland - Outfall Rock Drain	Dissolved Metals	Water	10/7/2014	1	500 mL poly	HNO3 pH<2	

Special Instructions: TDF A-048

Sample bottles have wrong date. Elliott sent email authorizing to change bottle date to match the ~~chain~~ COC. 10/8/14

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		10/8/14		10/8/14							

C141006

ESAT Technical Direction Form

Contract No. EPW13028
EPA Region 8

Site ID: 08BU
TDF ID: A-048

Date Issued: 6/3/2014
Date Updated:

Date Closed By:

Name: Rico Argentine 2014 Analytical Support Oct.

Details: The Contractor shall analyze approximately 10 surface water samples collected from the Rico Argentine St. Louis Tunnel Superfund site as indicated in the Analytical Information Section. The samples will be collected by Weston Solutions (Jan Christner) and sent to the ESAT R8 Lab during the week ending 6/6/14.

TO02/Subtask 02b: Inorganic Chemistry

The site RPM is Steve Way.

Analytical Information:

MATRIX

☑ Water ☐ Soils ☐ Vegetation ☐ Biota

WET CHEM

☐ TSS ☐ TDS ☐ DOC ☐ Alk ☐ Chloride ☐ Sulfate ☐ Fluoride ☐ Nitrate ☐ Nitrite
Other

METALS

☑ Dissolved ☑ Total Recoverable ☐ Total ☑ Hardness (Calc)

200.7: ☐ Ag ☑ Al ☐ As ☐ Ba ☒ Be ☐ B ☑ Ca ☐ Cd ☐ Co ☐ Cr ☐ Cu ☑ Fe ☑ K ☑ Mg
☒ Mn ☐ Mo ☑ Na ☐ Ni ☐ Pb ☐ Sb ☐ Se ☐ Sr ☐ Ti ☐ Tl ☐ V ☒ Zn ☐ SiO2

200.8: ☑ Ag ☐ Al ☑ As ☑ Ba ☑ Be ☑ Cd ☑ Co ☑ Cr ☑ Cu ☑ Mn ☑ Mo ☑ Ni ☑ Pb ☑ Sb
☑ Se ☐ Th ☑ Tl ☐ U ☑ V ☑ Zn

7470/7471/747 ☐ Hg

12/03/14

FIBERS

☐ PLM ☐ TEM

Deliverables

ID	*Description*	*Due Date*	*Submission Date*
1	Provide final deliverable package to Task Monitor no later than 30 days after delivery of samples.		

6/3/14

TechLaw

Sample Receipt Form - TLF-51.00

Project: Rico Argentine Tunnel **TDF #:** A-048

Date Received: 10/8/14 **Time Received:** 8:45 **By:** ~~Janette~~ Jessica Boyles

1	Airbill/shipping documents present?	Drop Off	Yes	No
2	Custody seals on **shipping** containers present and intact? N/A	None	Yes	No
3	Custody seals on **sample** containers present and intact?	None	Yes	No
4	Chain of Custody (COC) present?		Yes	No
5	COC and sample container information agree?		Yes	No
6	Aqueous samples preserved correctly, if required?	N/A	Yes	No
7	Samples received within holding times for requested analyses?		Yes	No
8	Sufficient sample volume for requested analyses?		Yes	No
9	Sample containers intact and not leaking?		Yes	No
10	Sample containers appropriate for requested analyses?		Yes	No
11	Samples shipped on ice?		Yes	No
12	Cooler temperature(s) ≤ 6.0 °C?	N/A	Yes	No

Cooler #:	1	2	3	4	5
Temperature (°C):	5.9				

Comments and Additional Information:

Client notified of anomalies, if necessary?	N/A	Yes	No
Anomalies noted in case narrative and data qualified, if necessary ?	N/A	Yes	No

PERKIN ELMER OPTIMA 4300DV ICP-OE

Project(s): Rio- Argentine Oct 2014 Date: 12 / 03 / 2014

Work Order(s): C141006 TDF: A- 048 Analyst: S. Van Overmeiren

Batch Preparation Information

Digest / Prep
TR / Total / Diss.

Matrix
Water / Soil / Other

Batch ID
1412020

Data Storage
Data File: X:/Metals Data Files/ A048- 1412020_141203

Standard Information

Calibration Std. # 1 = Reagent Blank Solution

SCV: *(LIMS ID: 4020403)*
Prepped: 10/20/14 By: SV

CRQL Stock: *(LIMS ID: 4020501)*
Prepped: 2-04-2014 By: SV

CRQL Daily *(LIMS ID: 4020502)*
Prepped: 12/03/14 By: SV

Calibration Std. # 2 = ESAT High, LIMS: 4020401
Prepped: 10/28/14 By: SV

ICV/CCV: 1:2 of 4020401 *(LIMS ID: 4020402)*
Prepped: 12/03/14 By: SV

ICSA: 4020404 **Prepped: 2-04-2014**

ICSAB: 4020405 Prepped: 2-04-2014

Spike Information

Dissolved Spikes

Sample ID: C141006-02

Sample ID:

Sample vol: 10 mL

QCS-3 : 100 uL
Exp: 2-1-2015 (LIMS ID: 4012234)

Salt Spike: 100 uL
Prepped 2-04-2014 *(LIMS ID: 4020314)*

Tot. / Tot. Rec. Spikes

Sample ID: —

Sample Vol: 50 mL

WW-LFS1: 500 uL
Exp: 2-1-2015 *(LIMS ID: 4012235)*

WW-LFS2: 500 uL
Exp: 2-1-2015 *(LIMS ID: 4012236)*

Comments / Maintenance

Replace Nebulizer? Y / N New pump tubing? Y / N Replace torch or injector? Y / N

Analytes Reported:

Ag, Al, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, K, Mg,

Mn, Mo, Na, Ni, Pb, Sb, Se, SiO2, Sr, Ti, Tl, V, Zn

Sequence ID: 1412023

Lims Entry (Date / Init): 12/03/14 SV

TLF-06.02	SOP: QAQ-04.01	Eff. Date: 11/11/2013

ESAT Region 8

ICP-OE Data Review Form

Analyst / Bench Review – Level I

LIMS:	C141006	TDF:	A-048
Matrix:	Water	Analysis:	Dissolved Metals

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	ICV 95-105%	☒ Yes ☐ No	SCV 90-110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRDL 70-130%	☒ Yes ☐ No	Blk. Spike (BS) 85-115% / SRM In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80% - 120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS Analyzed Every 10% of Samples 70-130%
☒ Yes ☐ No	ICSAB Spiked Analytes 80-120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90-110%	☒ Yes ☐ No	Internal Standards 80-120%

Other data quality issues identified ☐ Yes ☒ No

Describe any anomaly or deficiency not indicated above in the space provided

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples and QC data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Analyst:		Date:	12/03/14

Peer Review of Analytical Analysis – Level II

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	ICV 95-105%	☒ Yes ☐ No	SCV 90-110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRDL 70-130%	☒ Yes ☐ No	Blk. Spike (BS) 85-115% / SRM In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80-120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS Analyzed Every 10% of Samples 70-130%
☒ Yes ☐ No	ICSAB Spiked Analytes 80-120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90-110%	☒ Yes ☐ No	Internal Standards 80-120%

Other data quality issues identified ☐ Yes ☒ No

Describe any anomaly or deficiency not indicated above in the space provided

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples ~~and QC~~ data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Peer Reviewer:		Date:	12/4/2014

PREPARATION BENCH SHEET

1412020

TechLaw, Inc. - ESAT Region 8

Printed: 12/3/2014 10:23:42AM

Matrix: Water

Date Prepared: 12/03/14 10:22 By: SV

Prepared using: METALS - No Lab Prep Reqd

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
C141006-02 A	DM-Hardness - Calculated	8-B	50	50						AC2EFF	8-B
C141006-04 A	DM-Hardness - Calculated	8-B	50	50						FDB	8-B
C141006-06 A	DM-Hardness - Calculated	8-B	50	50						RDEFF	8-B
C141006-02 A	ICPOE Diss. Metals	8-B	50	50						AC2EFF	8-B
C141006-04 A	ICPOE Diss. Metals	8-B	50	50						FDB	8-B
C141006-06 A	ICPOE Diss. Metals	8-B	50	50						RDEFF	8-B
1412020-BLK1	QC		50	50						Blank	
1412020-BS1	QC		10	10	4020315	100				LCS	
1412020-DUP1	QC		50	50					C141006-02	Duplicate	
1412020-MS1	QC		10	10	4020315	100			C141006-02	Matrix Spike	

12/03/14

Preparation Reviewed By Date

ANALYSIS SEQUENCE

1412023 12/03/14

Instrument: ICPOE - PE Optima Sequence Date: 12/03/14 00:00 Printed: 12/3/2014 12:38:48PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1412023-ICV1		QC	4020402	Initial Cal Check		-	
1412023-SCV1		QC	4020403	Secondary Cal Check		-	
1412023-ICB1		QC		Initial Cal Blank		-	
1412023-CRL1		QC	4020502	Instrument RL Check		-	
1412023-IFA1		QC	4020404	Interference Check A		-	
1412023-IFB1		QC	4020405	Interference Check B		-	
1412020-BLK1		QC		Blank		-	
1412020-BS1		QC		LCS		-	
C141006-02 A		DM-Hardness - Calculated		AC2EFF	8-B		
C141006-02 A		ICPOE Diss. Metals		AC2EFF	8-B		
1412020-DUP1		QC		Duplicate		C141006-02	
1412023-SRD1		QC		Serial Dilution		C141006-02	
1412020-MS1		QC		Matrix Spike		C141006-02	
C141006-04 A		DM-Hardness - Calculated		FDB	8-B		
C141006-04 A		ICPOE Diss. Metals		FDB	8-B		
C141006-06 A		DM-Hardness - Calculated		RDEFF	8-B		
C141006-06 A		ICPOE Diss. Metals		RDEFF	8-B		
1412023-CCV1		QC	4020402	Calibration Check		-	
1412023-CCB1		QC		Calibration Blank		-	

Analytical Sequence

Method : ESAT_2013_1.0

Sv12/03/14

Seq.	Loc.		Sample ID
1	1		Cal Blank
2	9		High Std
3	3	QC	SEQ-ICV
4	10	QC	SEQ-SCV
5	1	QC	SEQ-ICB
6	11	QC	SEQ-CRL
7	12	QC	SEQ-IFA
8	13	QC	SEQ-IFB
9	26		1412020-BLK1
10	27		1412020-BS1
11	28		C141006-02
12	29		1412020-DUP1
13	30		SEQ-SRD1 @5X
14	31		1412020-MS1
15	32		C141006-04
16	33		C141006-06
17	34		Blank
18	3	QC	SEQ-CCV
19	1	QC	SEQ-CCB

Sample Information Detail Report
Document Name: A-048_1412020_OED_141203

File Description
A-048 Rico-Argentine Oct 2014

Parameters Common to All Samples

Batch ID	1412020
Analyst Name	S.VanOvermeiren
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Remarks
1	26	1412020-BLK1	
2	27	1412020-BS1	
3	28	C141006-02	
4	29	1412020-DUP1	
5	30	SEQ-SRD1 @5X	
6	31	1412020-MS1	
7	32	C141006-04	
8	33	C141006-06	
9	34	Blank	

Sample No	Aliquot Volume	Diluted To Vol.	Matrix Check Sample
1			
2			Recovery 3 of 1
3			
4			Duplicate of 3
5	2	10	5X Dilution of 3
6			Recovery 3 of 3
7			
8			
9			

Sr 12/03/14

==========

Analysis Begun

Start Time: 12/3/2014 11:16:21 AM **Plasma On Time: 12/3/2014 7:26:01 AM**
Logged In Analyst: esat **Technique: ICP Continuous**
Spectrometer Model: Optima 4300 DV, S/N 077N3082602Autosampler Model: AS-93plus

Sample Information File: C:\pe\Administrator\Sample Information\2014\A-048 Rico-Arg\A-048_1412020_OED_141
Batch ID: 1412020
Results Data Set: A-048_1412020_141203
Results Library: C:\pe\Administrator\Results\Results.mdb

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: Cal Blank **Date Collected: 12/3/2014 11:16:21 AM**
Analyst: **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Nebulizer Parameters: Cal Blank

Analyte	Back Pressure	Flow
All	247.0 kPa	0.80 L/min

Mean Data: Cal Blank

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sc Axial	2283713.1	12707.50	0.56%	100.0	%
Sc Radial	340351.9	776.29	0.23%	100.0	%
Ag 328.068†	-147.0	10.79	7.34%	[0.00]	ug/L
Al 396.153†	14.6	12.75	87.53%	[0.00]	ug/L
As 193.696†	-10.7	1.12	10.44%	[0.00]	ug/L
Ba 233.527†	-11.4	0.67	5.92%	[0.00]	ug/L
Be 313.107†	-941.4	18.27	1.94%	[0.00]	ug/L
B 249.677†	-119.3	0.99	0.83%	[0.00]	ug/L
Ca 317.933†	13.1	9.70	74.19%	[0.00]	ug/L
Cd 214.440†	-3.8	1.39	36.69%	[0.00]	ug/L
Co 228.616†	-21.6	2.03	9.39%	[0.00]	ug/L
Cr 267.716†	1.8	1.27	72.05%	[0.00]	ug/L
Cu 324.752†	2953.8	37.31	1.26%	[0.00]	ug/L
Fe 238.204†	6.2	0.81	12.96%	[0.00]	ug/L
K 766.490†	-28.5	17.75	62.33%	[0.00]	ug/L
Mg 285.213†	87.9	1.65	1.88%	[0.00]	ug/L
Mn 257.610†	48.0	4.48	9.34%	[0.00]	ug/L
Mo 202.031†	-4.4	1.92	44.17%	[0.00]	ug/L
Na 589.592†	166.1	1.79	1.08%	[0.00]	ug/L
Ni 231.604†	97.7	2.66	2.72%	[0.00]	ug/L
Pb 220.353†	-8.3	1.55	18.63%	[0.00]	ug/L
Sb 206.836†	10.0	0.41	4.07%	[0.00]	ug/L
Se 196.026†	1.4	2.90	201.23%	[0.00]	ug/L
SiO2 251.603†	212.5	8.48	3.99%	[0.00]	ug/L
Sr 421.552†	4352.7	6.25	0.14%	[0.00]	ug/L
Ti 334.940†	9.3	0.70	7.56%	[0.00]	ug/L
Tl 190.801†	-3.2	2.83	87.40%	[0.00]	ug/L
V 290.880†	1732.5	8.30	0.48%	[0.00]	ug/L
Zn 206.200†	-7.4	0.54	7.22%	[0.00]	ug/L

Sequence No.: 2
Sample ID: High Std
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 9
Date Collected: 12/3/2014 11:19:21 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: High Std

Analyte	Back Pressure	Flow
All	247.0 kPa	0.80 L/min

Mean Data: High Std

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sc Axial	2246348.9	9181.62	0.41%	98.36	%
Sc Radial	338412.2	4637.38	1.37%	99.43	%
Ag 328.068†	27898.4	104.97	0.38%	[500]	ug/L
Al 396.153†	135209.0	3421.42	2.53%	[25000]	ug/L
As 193.696†	471.5	3.80	0.81%	[5000]	ug/L
Ba 233.527†	8158.2	83.21	1.02%	[1000]	ug/L
Be 313.107†	331374.8	428.49	0.13%	[1000]	ug/L
B 249.677†	76599.2	406.53	0.53%	[10000]	ug/L
Ca 317.933†	47534.9	866.13	1.82%	[25000]	ug/L
Cd 214.440†	2345.7	14.47	0.62%	[1000]	ug/L
Co 228.616†	3220.0	7.04	0.22%	[1000]	ug/L
Cr 267.716†	22899.6	200.80	0.88%	[5000]	ug/L
Cu 324.752†	349709.8	48.39	0.01%	[2000]	ug/L
Fe 238.204†	1393.4	14.50	1.04%	[25000]	ug/L
K 766.490†	106184.0	3078.49	2.90%	[50000]	ug/L
Mg 285.213†	121975.6	3221.94	2.64%	[25000]	ug/L
Mn 257.610†	218958.6	258.26	0.12%	[2000]	ug/L
Mo 202.031†	489.1	4.54	0.93%	[1000]	ug/L
Na 589.592†	185544.8	5203.67	2.80%	[25000]	ug/L
Ni 231.604†	11659.1	49.91	0.43%	[5000]	ug/L
Pb 220.353†	2279.9	3.96	0.17%	[5000]	ug/L
Sb 206.836†	1205.0	8.18	0.68%	[5000]	ug/L
Se 196.026†	401.0	1.23	0.31%	[5000]	ug/L
SiO2 251.603†	71704.6	277.26	0.39%	[20000]	ug/L
Sr 421.552†	3080085.4	4753.96	0.15%	[1000]	ug/L
Ti 334.940†	191875.0	593.38	0.31%	[1000]	ug/L
Tl 190.801†	1301.5	3.21	0.25%	[5000]	ug/L
V 290.880†	46493.7	266.10	0.57%	[2000]	ug/L
Zn 206.200†	3868.3	15.69	0.41%	[5000]	ug/L

Calibration Summary

Analyte	Stds.	Equation	Intercept	Slope	Curvature	Corr. Coef.	Reslope
Ag 328.068	1	Lin Thru 0	0.0	55.80	0.00000	1.000000	
Al 396.153	1	Lin, Calc Int	0.0	5.408	0.00000	1.000000	
As 193.696	1	Lin Thru 0	0.0	0.0943	0.00000	1.000000	
Ba 233.527	1	Lin Thru 0	0.0	8.158	0.00000	1.000000	
Be 313.107	1	Lin Thru 0	0.0	331.4	0.00000	1.000000	
B 249.677	1	Lin Thru 0	0.0	7.660	0.00000	1.000000	
Ca 317.933	1	Lin Thru 0	0.0	1.901	0.00000	1.000000	
Cd 214.440	1	Lin Thru 0	0.0	2.346	0.00000	1.000000	
Co 228.616	1	Lin Thru 0	0.0	3.220	0.00000	1.000000	
Cr 267.716	1	Lin Thru 0	0.0	4.580	0.00000	1.000000	
Cu 324.752	1	Lin Thru 0	0.0	174.9	0.00000	1.000000	
Fe 238.204	1	Lin, Calc Int	0.0	0.0557	0.00000	1.000000	
K 766.490	1	Lin Thru 0	0.0	2.124	0.00000	1.000000	
Mg 285.213	1	Lin, Calc Int	0.0	4.879	0.00000	1.000000	
Mn 257.610	1	Lin Thru 0	0.0	109.5	0.00000	1.000000	
Mo 202.031	1	Lin Thru 0	0.0	0.4891	0.00000	1.000000	
Na 589.592	1	Lin, Calc Int	0.0	7.422	0.00000	1.000000	
Ni 231.604	1	Lin Thru 0	0.0	2.332	0.00000	1.000000	
Pb 220.353	1	Lin Thru 0	0.0	0.4560	0.00000	1.000000	
Sb 206.836	1	Lin Thru 0	0.0	0.2410	0.00000	1.000000	

Se 196.026	1	Lin Thru 0	0.0	0.0802	0.00000	1.000000
SiO2 251.603	1	Lin, Calc Int	0.0	3.585	0.00000	1.000000
Sr 421.552	1	Lin, Calc Int	0.0	3080	0.00000	1.000000
Ti 334.940	1	Lin Thru 0	0.0	191.9	0.00000	1.000000
Tl 190.801	1	Lin Thru 0	0.0	0.2603	0.00000	1.000000
V 290.880	1	Lin Thru 0	0.0	23.25	0.00000	1.000000
Zn 206.200	1	Lin Thru 0	0.0	0.7737	0.00000	1.000000

Sequence No.: 3
Sample ID: SEQ-ICV
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 3
Date Collected: 12/3/2014 11:22:35 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-ICV

Analyte	Back Pressure	Flow
All	248.0 kPa	0.80 L/min

Mean Data: SEQ-ICV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2275034.2	99.62	%	0.311				0.31%
Sc Radial	341568.2	100.4	%	0.93				0.93%
Ag 328.068†	14067.8	256.2	ug/L	0.65	256.2	ug/L	0.65	0.25%
QC value within limits for Ag 328.068 Recovery = 102.46%								
Al 396.153†	68931.9	12740	ug/L	282.1	12740	ug/L	282.1	2.21%
QC value within limits for Al 396.153 Recovery = 101.93%								
As 193.696†	240.1	2587	ug/L	36.7	2587	ug/L	36.7	1.42%
QC value within limits for As 193.696 Recovery = 103.46%								
Ba 233.527†	4155.9	506.6	ug/L	2.91	506.6	ug/L	2.91	0.58%
QC value within limits for Ba 233.527 Recovery = 101.31%								
Be 313.107†	169450.5	511.1	ug/L	1.29	511.1	ug/L	1.29	0.25%
QC value within limits for Be 313.107 Recovery = 102.23%								
B 249.677†	39067.4	5100	ug/L	5.0	5100	ug/L	5.0	0.10%
QC value within limits for B 249.677 Recovery = 102.00%								
Ca 317.933†	24037.4	12580	ug/L	262.0	12580	ug/L	262.0	2.08%
QC value within limits for Ca 317.933 Recovery = 100.64%								
Cd 214.440†	1201.8	511.8	ug/L	2.10	511.8	ug/L	2.10	0.41%
QC value within limits for Cd 214.440 Recovery = 102.36%								
Co 228.616†	1649.8	512.8	ug/L	4.94	512.8	ug/L	4.94	0.96%
QC value within limits for Co 228.616 Recovery = 102.56%								
Cr 267.716†	11676.8	2551	ug/L	9.8	2551	ug/L	9.8	0.38%
QC value within limits for Cr 267.716 Recovery = 102.02%								
Cu 324.752†	175149.4	1004	ug/L	1.7	1004	ug/L	1.7	0.17%
QC value within limits for Cu 324.752 Recovery = 100.40%								
Fe 238.204†	706.8	12650	ug/L	155.3	12650	ug/L	155.3	1.23%
QC value within limits for Fe 238.204 Recovery = 101.21%								
K 766.490†	54557.0	25530	ug/L	549.1	25530	ug/L	549.1	2.15%
QC value within limits for K 766.490 Recovery = 102.13%								
Mg 285.213†	62569.1	12810	ug/L	291.8	12810	ug/L	291.8	2.28%
QC value within limits for Mg 285.213 Recovery = 102.51%								
Mn 257.610†	113570.8	1036	ug/L	4.6	1036	ug/L	4.6	0.45%
QC value within limits for Mn 257.610 Recovery = 103.63%								
Mo 202.031†	247.2	503.2	ug/L	4.52	503.2	ug/L	4.52	0.90%
QC value within limits for Mo 202.031 Recovery = 100.65%								
Na 589.592†	96076.1	12830	ug/L	272.3	12830	ug/L	272.3	2.12%
QC value within limits for Na 589.592 Recovery = 102.65%								
Ni 231.604†	5982.0	2565	ug/L	5.0	2565	ug/L	5.0	0.20%
QC value within limits for Ni 231.604 Recovery = 102.62%								
Pb 220.353†	1173.2	2568	ug/L	13.1	2568	ug/L	13.1	0.51%
QC value within limits for Pb 220.353 Recovery = 102.71%								
Sb 206.836†	606.3	2480	ug/L	6.6	2480	ug/L	6.6	0.27%
QC value within limits for Sb 206.836 Recovery = 99.21%								
Se 196.026†	211.8	2645	ug/L	47.3	2645	ug/L	47.3	1.79%
QC value greater than the upper limit for Se 196.026 Recovery = 105.80%								
SiO2 251.603†	36322.8	10120	ug/L	8.0	10120	ug/L	8.0	0.08%
QC value within limits for SiO2 251.603 Recovery = 101.15%								
Sr 421.552†	1606459.2	520.3	ug/L	0.65	520.3	ug/L	0.65	0.13%
QC value within limits for Sr 421.552 Recovery = 104.06%								
Ti 334.940†	97288.1	507.0	ug/L	0.60	507.0	ug/L	0.60	0.12%
QC value within limits for Ti 334.940 Recovery = 101.41%								
Tl 190.801†	670.8	2580	ug/L	14.4	2580	ug/L	14.4	0.56%
QC value within limits for Tl 190.801 Recovery = 103.22%								
V 290.880†	23602.2	1014	ug/L	2.5	1014	ug/L	2.5	0.24%
QC value within limits for V 290.880 Recovery = 101.38%								

Zn 206.200†	1998.8	2578 ug/L	7.1	2578 ug/L	7.1	0.28%

QC value within limits for Zn 206.200 Recovery = 103.11%
QC Failed. Continue with analysis.

Sequence No.: 4
Sample ID: SEQ-SCV
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 10
Date Collected: 12/3/2014 11:25:39 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-SCV

Analyte	Back Pressure	Flow
All	247.0 kPa	0.80 L/min

Mean Data: SEQ-SCV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2281747.0	99.91	%	0.314				0.31%
Sc Radial	341778.6	100.4	%	0.79				0.79%
Ag 328.068†	14259.5	259.2	ug/L	2.17	259.2	ug/L	2.17	0.84%
QC value within limits for Ag 328.068 Recovery = 103.66%								
Al 396.153†	5220.3	943.7	ug/L	22.73	943.7	ug/L	22.73	2.41%
QC value within limits for Al 396.153 Recovery = 94.37%								
As 193.696†	189.7	2032	ug/L	30.6	2032	ug/L	30.6	1.51%
QC value within limits for As 193.696 Recovery = 101.60%								
Ba 233.527†	8393.0	1027	ug/L	13.1	1027	ug/L	13.1	1.28%
QC value within limits for Ba 233.527 Recovery = 102.69%								
Be 313.107†	337196.7	1017	ug/L	1.8	1017	ug/L	1.8	0.18%
QC value within limits for Be 313.107 Recovery = 101.74%								
B 249.677†	7964.0	1040	ug/L	8.3	1040	ug/L	8.3	0.80%
QC value within limits for B 249.677 Recovery = 103.97%								
Ca 317.933†	1891.5	940.8	ug/L	6.28	940.8	ug/L	6.28	0.67%
QC value within limits for Ca 317.933 Recovery = 94.08%								
Cd 214.440†	2403.8	1025	ug/L	7.5	1025	ug/L	7.5	0.74%
QC value within limits for Cd 214.440 Recovery = 102.46%								
Co 228.616†	3332.0	1036	ug/L	7.5	1036	ug/L	7.5	0.73%
QC value within limits for Co 228.616 Recovery = 103.56%								
Cr 267.716†	4618.3	1009	ug/L	11.8	1009	ug/L	11.8	1.16%
QC value within limits for Cr 267.716 Recovery = 100.95%								
Cu 324.752†	176677.6	1012	ug/L	5.2	1012	ug/L	5.2	0.51%
QC value within limits for Cu 324.752 Recovery = 101.22%								
Fe 238.204†	55.2	975.8	ug/L	33.92	975.8	ug/L	33.92	3.48%
QC value within limits for Fe 238.204 Recovery = 97.58%								
K 766.490†	10801.3	4842	ug/L	94.0	4842	ug/L	94.0	1.94%
QC value within limits for K 766.490 Recovery = 96.84%								
Mg 285.213†	4854.8	985.6	ug/L	10.53	985.6	ug/L	10.53	1.07%
QC value within limits for Mg 285.213 Recovery = 98.56%								
Mn 257.610†	115111.9	1051	ug/L	8.4	1051	ug/L	8.4	0.80%
QC value within limits for Mn 257.610 Recovery = 105.06%								
Mo 202.031†	492.6	1007	ug/L	5.7	1007	ug/L	5.7	0.57%
QC value within limits for Mo 202.031 Recovery = 100.70%								
Na 589.592†	7782.3	965.1	ug/L	18.35	965.1	ug/L	18.35	1.90%
QC value within limits for Na 589.592 Recovery = 96.51%								
Ni 231.604†	2435.0	1046	ug/L	6.6	1046	ug/L	6.6	0.63%
QC value within limits for Ni 231.604 Recovery = 104.61%								
Pb 220.353†	938.3	2051	ug/L	5.9	2051	ug/L	5.9	0.29%
QC value within limits for Pb 220.353 Recovery = 102.53%								
Sb 206.836†	476.8	1972	ug/L	16.8	1972	ug/L	16.8	0.85%
QC value within limits for Sb 206.836 Recovery = 98.60%								
Se 196.026†	82.2	1027	ug/L	13.0	1027	ug/L	13.0	1.27%
QC value within limits for Se 196.026 Recovery = 102.66%								
SiO2 251.603†	18045.7	4977	ug/L	18.1	4977	ug/L	18.1	0.36%
QC value within limits for SiO2 251.603 Recovery = 99.54%								
Sr 421.552†	3212637.8	1042	ug/L	2.9	1042	ug/L	2.9	0.28%
QC value within limits for Sr 421.552 Recovery = 104.25%								
Ti 334.940†	195863.8	1021	ug/L	0.6	1021	ug/L	0.6	0.06%
QC value within limits for Ti 334.940 Recovery = 102.08%								
Tl 190.801†	1309.5	5037	ug/L	33.2	5037	ug/L	33.2	0.66%
QC value within limits for Tl 190.801 Recovery = 100.73%								
V 290.880†	23443.8	1010	ug/L	8.0	1010	ug/L	8.0	0.79%
QC value within limits for V 290.880 Recovery = 101.00%								

Zn 206.200†	790.3	1014 ug/L	12.5	1014 ug/L	12.5	1.23%

QC value within limits for Zn 206.200 Recovery = 101.37%

All analyte(s) passed QC.

Sequence No.: 5
Sample ID: SEQ-ICB
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 1
Date Collected: 12/3/2014 11:28:52 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-ICB

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: SEQ-ICB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2321449.7	101.7	%	0.62				0.61%
Sc Radial	343665.5	101.0	%	0.35				0.34%
Ag 328.068†	17.2	0.3139	ug/L	0.23068	0.3139	ug/L	0.23068	73.50%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Al 396.153†	-0.8	-0.3661	ug/L	3.48555	-0.3661	ug/L	3.48555	952.01%
QC value within limits for Al 396.153 Recovery = Not calculated								
As 193.696†	1.1	11.40	ug/L	29.176	11.40	ug/L	29.176	255.96%
QC value within limits for As 193.696 Recovery = Not calculated								
Ba 233.527†	0.7	0.0759	ug/L	0.02688	0.0759	ug/L	0.02688	35.43%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.107†	187.4	0.5649	ug/L	0.04913	0.5649	ug/L	0.04913	8.70%
QC value within limits for Be 313.107 Recovery = Not calculated								
B 249.677†	115.0	15.01	ug/L	0.986	15.01	ug/L	0.986	6.57%
QC value within limits for B 249.677 Recovery = Not calculated								
Ca 317.933†	0.7	0.2290	ug/L	2.34525	0.2290	ug/L	2.34525	>999.9%
QC value within limits for Ca 317.933 Recovery = Not calculated								
Cd 214.440†	1.3	0.5610	ug/L	0.92842	0.5610	ug/L	0.92842	165.48%
QC value within limits for Cd 214.440 Recovery = Not calculated								
Co 228.616†	0.5	0.1515	ug/L	0.17800	0.1515	ug/L	0.17800	117.49%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cr 267.716†	0.5	0.1108	ug/L	0.17883	0.1108	ug/L	0.17883	161.43%
QC value within limits for Cr 267.716 Recovery = Not calculated								
Cu 324.752†	-172.5	-0.9833	ug/L	0.12980	-0.9833	ug/L	0.12980	13.20%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 238.204†	0.3	5.803	ug/L	44.7133	5.803	ug/L	44.7133	770.55%
QC value within limits for Fe 238.204 Recovery = Not calculated								
K 766.490†	51.1	24.12	ug/L	14.774	24.12	ug/L	14.774	61.25%
QC value within limits for K 766.490 Recovery = Not calculated								
Mg 285.213†	-2.1	-0.4686	ug/L	0.27426	-0.4686	ug/L	0.27426	58.53%
QC value within limits for Mg 285.213 Recovery = Not calculated								
Mn 257.610†	13.3	0.1183	ug/L	0.03332	0.1183	ug/L	0.03332	28.16%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 202.031†	2.2	4.538	ug/L	6.0866	4.538	ug/L	6.0866	134.13%
QC value within limits for Mo 202.031 Recovery = Not calculated								
Na 589.592†	7.1	0.7292	ug/L	0.56437	0.7292	ug/L	0.56437	77.40%
QC value within limits for Na 589.592 Recovery = Not calculated								
Ni 231.604†	-5.0	-2.134	ug/L	2.1150	-2.134	ug/L	2.1150	99.13%
QC value within limits for Ni 231.604 Recovery = Not calculated								
Pb 220.353†	1.2	2.508	ug/L	11.9682	2.508	ug/L	11.9682	477.28%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Sb 206.836†	-0.3	-1.108	ug/L	9.3172	-1.108	ug/L	9.3172	840.56%
QC value within limits for Sb 206.836 Recovery = Not calculated								
Se 196.026†	2.8	34.74	ug/L	32.173	34.74	ug/L	32.173	92.61%
QC value within limits for Se 196.026 Recovery = Not calculated								
SiO2 251.603†	-3.1	-0.8809	ug/L	1.91859	-0.8809	ug/L	1.91859	217.81%
QC value within limits for SiO2 251.603 Recovery = Not calculated								
Sr 421.552†	370.1	0.119	ug/L	0.0130	0.119	ug/L	0.0130	10.93%
QC value within limits for Sr 421.552 Recovery = Not calculated								
Ti 334.940†	65.1	0.339	ug/L	0.0285	0.339	ug/L	0.0285	8.41%
QC value within limits for Ti 334.940 Recovery = Not calculated								
Tl 190.801†	1.1	4.245	ug/L	11.3421	4.245	ug/L	11.3421	267.16%
QC value within limits for Tl 190.801 Recovery = Not calculated								
V 290.880†	-107.3	-4.601	ug/L	0.8510	-4.601	ug/L	0.8510	18.50%
QC value within limits for V 290.880 Recovery = Not calculated								

Zn 206.200†	0.8	1.013 ug/L	0.7908	1.013 ug/L	0.7908	78.07%

QC value within limits for Zn 206.200 Recovery = Not calculated

All analyte(s) passed QC.

Sequence No.: 6
Sample ID: SEQ-CRL
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 11
Date Collected: 12/3/2014 11:31:53 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-CRL

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: SEQ-CRL

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2237718.5	97.99	%	0.790				0.81%
Sc Radial	338937.7	99.58	%	0.838				0.84%
Ag 328.068†	575.8	10.42	ug/L	0.071	10.42	ug/L	0.071	0.68%
QC value within limits for Ag 328.068 Recovery = 104.19%								
Al 396.153†	529.4	97.81	ug/L	1.108	97.81	ug/L	1.108	1.13%
QC value within limits for Al 396.153 Recovery = 97.81%								
As 193.696†	4.1	45.00	ug/L	18.479	45.00	ug/L	18.479	41.07%
QC value within limits for As 193.696 Recovery = 89.99%								
Ba 233.527†	86.7	10.58	ug/L	0.318	10.58	ug/L	0.318	3.01%
QC value within limits for Ba 233.527 Recovery = 105.82%								
Be 313.107†	1661.5	5.008	ug/L	0.0252	5.008	ug/L	0.0252	0.50%
QC value within limits for Be 313.107 Recovery = 100.16%								
B 249.677†	2051.6	267.8	ug/L	0.94	267.8	ug/L	0.94	0.35%
QC value within limits for B 249.677 Recovery = 107.13%								
Ca 317.933†	469.5	245.3	ug/L	2.35	245.3	ug/L	2.35	0.96%
QC value within limits for Ca 317.933 Recovery = 98.13%								
Cd 214.440†	25.1	10.71	ug/L	0.342	10.71	ug/L	0.342	3.19%
QC value within limits for Cd 214.440 Recovery = 107.09%								
Co 228.616†	34.0	10.58	ug/L	0.515	10.58	ug/L	0.515	4.87%
QC value within limits for Co 228.616 Recovery = 105.80%								
Cr 267.716†	44.2	9.698	ug/L	0.5706	9.698	ug/L	0.5706	5.88%
QC value within limits for Cr 267.716 Recovery = 96.98%								
Cu 324.752†	1810.4	10.40	ug/L	0.152	10.40	ug/L	0.152	1.46%
QC value within limits for Cu 324.752 Recovery = 103.98%								
Fe 238.204†	5.9	105.1	ug/L	38.97	105.1	ug/L	38.97	37.08%
QC value within limits for Fe 238.204 Recovery = 105.09%								
K 766.490†	2267.5	1064	ug/L	31.1	1064	ug/L	31.1	2.92%
QC value within limits for K 766.490 Recovery = 106.41%								
Mg 285.213†	4947.0	1014	ug/L	10.1	1014	ug/L	10.1	1.00%
QC value within limits for Mg 285.213 Recovery = 101.36%								
Mn 257.610†	1208.5	11.00	ug/L	0.089	11.00	ug/L	0.089	0.81%
QC value within limits for Mn 257.610 Recovery = 109.97%								
Mo 202.031†	5.9	12.12	ug/L	3.686	12.12	ug/L	3.686	30.43%
QC value within limits for Mo 202.031 Recovery = 121.15%								
Na 589.592†	7825.4	1052	ug/L	18.9	1052	ug/L	18.9	1.79%
QC value within limits for Na 589.592 Recovery = 105.21%								
Ni 231.604†	26.6	11.41	ug/L	2.497	11.41	ug/L	2.497	21.88%
QC value within limits for Ni 231.604 Recovery = 114.12%								
Pb 220.353†	17.7	38.73	ug/L	5.296	38.73	ug/L	5.296	13.67%
QC value within limits for Pb 220.353 Recovery = 129.09%								
Sb 206.836†	11.2	46.21	ug/L	7.629	46.21	ug/L	7.629	16.51%
QC value within limits for Sb 206.836 Recovery = 92.42%								
Se 196.026†	7.0	87.76	ug/L	6.254	87.76	ug/L	6.254	7.13%
QC value within limits for Se 196.026 Recovery = 87.76%								
SiO2 251.603†	832.8	231.5	ug/L	1.59	231.5	ug/L	1.59	0.69%
QC value within limits for SiO2 251.603 Recovery = 92.59%								
Sr 421.552†	34065.8	11.04	ug/L	0.030	11.04	ug/L	0.030	0.28%
QC value within limits for Sr 421.552 Recovery = 110.42%								
Ti 334.940†	9972.1	51.97	ug/L	0.065	51.97	ug/L	0.065	0.12%
QC value within limits for Ti 334.940 Recovery = 103.94%								
Tl 190.801†	14.5	56.62	ug/L	4.713	56.62	ug/L	4.713	8.32%
QC value within limits for Tl 190.801 Recovery = 113.24%								
V 290.880†	1244.9	53.47	ug/L	1.071	53.47	ug/L	1.071	2.00%
QC value within limits for V 290.880 Recovery = 106.95%								

Zn 206.200†	42.8	55.14 ug/L	2.156	55.14 ug/L	2.156	3.91%

QC value within limits for Zn 206.200 Recovery = 110.28%

All analyte(s) passed QC.

Sequence No.: 7
Sample ID: SEQ-IFA
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 12
Date Collected: 12/3/2014 11:34:56 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-IFA

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: SEQ-IFA

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2109294.9	92.36	%	0.217				0.23%
Sc Radial	318797.4	93.67	%	1.050				1.12%
Ag 328.068†	-595.2	4.704	ug/L	0.5777	4.704	ug/L	0.5777	12.28%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Al 396.153†	330112.1	60960	ug/L	751.2	60960	ug/L	751.2	1.23%
QC value within limits for Al 396.153 Recovery = 101.60%								
As 193.696†	-24.4	16.09	ug/L	47.499	16.09	ug/L	47.499	295.18%
QC value within limits for As 193.696 Recovery = Not calculated								
Ba 233.527†	29.5	-0.8114	ug/L	0.31033	-0.8114	ug/L	0.31033	38.25%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.107†	50.7	-0.6066	ug/L	0.08128	-0.6066	ug/L	0.08128	13.40%
QC value within limits for Be 313.107 Recovery = Not calculated								
B 249.677†	-990.6	-129.3	ug/L	1.13	-129.3	ug/L	1.13	0.87%
QC value within limits for B 249.677 Recovery = Not calculated								
Ca 317.933†	583861.4	307000	ug/L	4419.2	307000	ug/L	4419.2	1.44%
QC value within limits for Ca 317.933 Recovery = 102.34%								
Cd 214.440†	8.7	-5.542	ug/L	1.1291	-5.542	ug/L	1.1291	20.37%
QC value less than the lower limit for Cd 214.440 Recovery = Not calculated								
Co 228.616†	32.7	4.493	ug/L	1.4040	4.493	ug/L	1.4040	31.25%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cr 267.716†	-23.6	-1.129	ug/L	0.4635	-1.129	ug/L	0.4635	41.06%
QC value within limits for Cr 267.716 Recovery = Not calculated								
Cu 324.752†	-2424.4	-1.140	ug/L	0.3639	-1.140	ug/L	0.3639	31.91%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 238.204†	13218.9	237100	ug/L	2979.8	237100	ug/L	2979.8	1.26%
QC value within limits for Fe 238.204 Recovery = 94.85%								
K 766.490†	33.8	-87.83	ug/L	5.692	-87.83	ug/L	5.692	6.48%
QC value within limits for K 766.490 Recovery = Not calculated								
Mg 285.213†	711712.5	145900	ug/L	1631.6	145900	ug/L	1631.6	1.12%
QC value within limits for Mg 285.213 Recovery = 97.27%								
Mn 257.610†	244.5	-0.3270	ug/L	0.11880	-0.3270	ug/L	0.11880	36.33%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 202.031†	14.9	9.486	ug/L	1.6925	9.486	ug/L	1.6925	17.84%
QC value within limits for Mo 202.031 Recovery = Not calculated								
Na 589.592†	384444.1	51670	ug/L	359.4	51670	ug/L	359.4	0.70%
QC value within limits for Na 589.592 Recovery = 103.35%								
Ni 231.604†	100.3	4.035	ug/L	2.4513	4.035	ug/L	2.4513	60.76%
QC value within limits for Ni 231.604 Recovery = Not calculated								
Pb 220.353†	-25.7	15.12	ug/L	7.596	15.12	ug/L	7.596	50.23%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Sb 206.836†	9.1	-9.310	ug/L	16.6909	-9.310	ug/L	16.6909	179.27%
QC value within limits for Sb 206.836 Recovery = Not calculated								
Se 196.026†	-5.2	-28.45	ug/L	54.672	-28.45	ug/L	54.672	192.16%
QC value within limits for Se 196.026 Recovery = Not calculated								
SiO2 251.603†	-199.8	25.89	ug/L	2.605	25.89	ug/L	2.605	10.06%
QC value within limits for SiO2 251.603 Recovery = Not calculated								
Sr 421.552†	45473.0	-2.050	ug/L	0.2950	-2.050	ug/L	0.2950	14.39%
QC value within limits for Sr 421.552 Recovery = Not calculated								
Ti 334.940†	139.9	0.729	ug/L	0.0411	0.729	ug/L	0.0411	5.64%
QC value within limits for Ti 334.940 Recovery = Not calculated								
Tl 190.801†	0.6	-9.196	ug/L	7.0740	-9.196	ug/L	7.0740	76.93%
QC value within limits for Tl 190.801 Recovery = Not calculated								
V 290.880†	702.6	-0.431	ug/L	1.8774	-0.431	ug/L	1.8774	435.53%
QC value within limits for V 290.880 Recovery = Not calculated								

Zn 206.200†	-1.3	-2.404 ug/L	1.1250	-2.404 ug/L	1.1250	46.80%

QC value within limits for Zn 206.200 Recovery = Not calculated
QC Failed. Continue with analysis.

Sequence No.: 8
Sample ID: SEQ-IFB
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 13
Date Collected: 12/3/2014 11:38:37 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-IFB

Analyte	Back Pressure	Flow
All	248.0 kPa	0.80 L/min

Mean Data: SEQ-IFB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2110117.6	92.40	%	0.249				0.27%
Sc Radial	321726.6	94.53	%	1.093				1.16%
Ag 328.068†	17114.9	324.2	ug/L	0.11	324.2	ug/L	0.11	0.03%
QC value within limits for Ag 328.068 Recovery = 108.07%								
Al 396.153†	326855.3	60370	ug/L	929.2	60370	ug/L	929.2	1.54%
QC value within limits for Al 396.153 Recovery = 100.61%								
As 193.696†	73.7	1058	ug/L	25.1	1058	ug/L	25.1	2.37%
QC value within limits for As 193.696 Recovery = 105.85%								
Ba 233.527†	2467.2	296.6	ug/L	1.61	296.6	ug/L	1.61	0.54%
QC value within limits for Ba 233.527 Recovery = 98.87%								
Be 313.107†	31928.3	95.50	ug/L	0.570	95.50	ug/L	0.570	0.60%
QC value within limits for Be 313.107 Recovery = 95.50%								
B 249.677†	3053.5	398.6	ug/L	3.73	398.6	ug/L	3.73	0.94%
QC value less than the lower limit for B 249.677 Recovery = 79.73%								
Ca 317.933†	576348.5	303100	ug/L	5081.2	303100	ug/L	5081.2	1.68%
QC value within limits for Ca 317.933 Recovery = 101.02%								
Cd 214.440†	709.4	293.2	ug/L	1.73	293.2	ug/L	1.73	0.59%
QC value within limits for Cd 214.440 Recovery = 97.73%								
Co 228.616†	980.4	299.2	ug/L	0.07	299.2	ug/L	0.07	0.02%
QC value within limits for Co 228.616 Recovery = 99.74%								
Cr 267.716†	1321.8	293.5	ug/L	2.45	293.5	ug/L	2.45	0.83%
QC value within limits for Cr 267.716 Recovery = 97.84%								
Cu 324.752†	52099.5	311.3	ug/L	2.50	311.3	ug/L	2.50	0.80%
QC value within limits for Cu 324.752 Recovery = 103.78%								
Fe 238.204†	13131.7	235500	ug/L	2651.7	235500	ug/L	2651.7	1.13%
QC value within limits for Fe 238.204 Recovery = 94.22%								
K 766.490†	44993.8	20940	ug/L	107.0	20940	ug/L	107.0	0.51%
QC value within limits for K 766.490 Recovery = 104.71%								
Mg 285.213†	703098.3	144100	ug/L	2148.8	144100	ug/L	2148.8	1.49%
QC value within limits for Mg 285.213 Recovery = 96.09%								
Mn 257.610†	21949.9	197.6	ug/L	0.43	197.6	ug/L	0.43	0.22%
QC value within limits for Mn 257.610 Recovery = 98.78%								
Mo 202.031†	157.5	301.9	ug/L	2.99	301.9	ug/L	2.99	0.99%
QC value within limits for Mo 202.031 Recovery = 100.62%								
Na 589.592†	378889.5	50880	ug/L	841.7	50880	ug/L	841.7	1.65%
QC value within limits for Na 589.592 Recovery = 101.75%								
Ni 231.604†	785.0	299.2	ug/L	1.40	299.2	ug/L	1.40	0.47%
QC value within limits for Ni 231.604 Recovery = 99.73%								
Pb 220.353†	427.4	1003	ug/L	8.9	1003	ug/L	8.9	0.89%
QC value within limits for Pb 220.353 Recovery = 100.28%								
Sb 206.836†	247.9	977.6	ug/L	22.50	977.6	ug/L	22.50	2.30%
QC value within limits for Sb 206.836 Recovery = 97.76%								
Se 196.026†	34.2	468.2	ug/L	27.62	468.2	ug/L	27.62	5.90%
QC value within limits for Se 196.026 Recovery = 93.64%								
SiO2 251.603†	1655.9	482.6	ug/L	1.68	482.6	ug/L	1.68	0.35%
QC value within limits for SiO2 251.603 Recovery = 96.53%								
Sr 421.552†	3138744.4	1002	ug/L	5.1	1002	ug/L	5.1	0.51%
QC value within limits for Sr 421.552 Recovery = 100.22%								
Ti 334.940†	196828.8	1026	ug/L	3.8	1026	ug/L	3.8	0.37%
QC value within limits for Ti 334.940 Recovery = 102.58%								
Tl 190.801†	248.9	943.5	ug/L	20.26	943.5	ug/L	20.26	2.15%
QC value within limits for Tl 190.801 Recovery = 94.35%								
V 290.880†	7864.5	306.3	ug/L	2.18	306.3	ug/L	2.18	0.71%
QC value within limits for V 290.880 Recovery = 102.09%								

Zn 206.200†	222.8	282.4 ug/L	6.85	282.4 ug/L	6.85	2.43%

QC value within limits for Zn 206.200 Recovery = 94.13%

QC Failed. Continue with analysis.

Sequence No.: 9
Sample ID: 1412020-BLK1
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 26
Date Collected: 12/3/2014 11:42:28 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: 1412020-BLK1

Analyte	Back Pressure	Flow
All	248.0 kPa	0.80 L/min

Mean Data: 1412020-BLK1

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2323396.3	101.7	%	0.35				0.34%
Sc Radial	342151.3	100.5	%	1.14				1.14%
Ag 328.068†	6.2	0.1121	ug/L	0.07670	0.1121	ug/L	0.07670	68.44%
Al 396.153†	-3.8	-0.7591	ug/L	1.00413	-0.7591	ug/L	1.00413	132.28%
As 193.696†	0.2	2.294	ug/L	16.7939	2.294	ug/L	16.7939	732.07%
Ba 233.527†	-0.1	-0.0106	ug/L	0.16986	-0.0106	ug/L	0.16986	>999.9%
Be 313.107†	149.1	0.4499	ug/L	0.04821	0.4499	ug/L	0.04821	10.72%
B 249.677†	13.3	1.733	ug/L	0.2537	1.733	ug/L	0.2537	14.64%
Ca 317.933†	25.4	13.36	ug/L	2.543	13.36	ug/L	2.543	19.03%
Cd 214.440†	0.7	0.2849	ug/L	0.62669	0.2849	ug/L	0.62669	219.93%
Co 228.616†	-0.5	-0.1589	ug/L	0.86141	-0.1589	ug/L	0.86141	542.09%
Cr 267.716†	1.6	0.3479	ug/L	0.57958	0.3479	ug/L	0.57958	166.60%
Cu 324.752†	-248.1	-1.418	ug/L	0.0484	-1.418	ug/L	0.0484	3.41%
Fe 238.204†	3.0	53.66	ug/L	43.271	53.66	ug/L	43.271	80.64%
K 766.490†	50.0	23.33	ug/L	4.493	23.33	ug/L	4.493	19.26%
Mg 285.213†	-27.3	-5.582	ug/L	1.6504	-5.582	ug/L	1.6504	29.56%
Mn 257.610†	-10.1	-0.0918	ug/L	0.00752	-0.0918	ug/L	0.00752	8.19%
Mo 202.031†	0.7	1.390	ug/L	4.1416	1.390	ug/L	4.1416	297.85%
Na 589.592†	80.5	10.82	ug/L	0.868	10.82	ug/L	0.868	8.02%
Ni 231.604†	1.5	0.6129	ug/L	0.73757	0.6129	ug/L	0.73757	120.35%
Pb 220.353†	1.4	3.010	ug/L	2.8189	3.010	ug/L	2.8189	93.66%
Sb 206.836†	-0.4	-1.509	ug/L	2.7320	-1.509	ug/L	2.7320	181.04%
Se 196.026†	-0.4	-5.417	ug/L	13.5300	-5.417	ug/L	13.5300	249.76%
SiO2 251.603†	-142.7	-39.85	ug/L	0.707	-39.85	ug/L	0.707	1.77%
Sr 421.552†	72.4	0.020	ug/L	0.0102	0.020	ug/L	0.0102	50.51%
Ti 334.940†	3.9	0.020	ug/L	0.0227	0.020	ug/L	0.0227	112.28%
Tl 190.801†	0.6	2.210	ug/L	7.1023	2.210	ug/L	7.1023	321.37%
V 290.880†	-130.4	-5.605	ug/L	0.2217	-5.605	ug/L	0.2217	3.96%
Zn 206.200†	0.7	0.962	ug/L	1.4341	0.962	ug/L	1.4341	149.01%

Sequence No.: 10
Sample ID: 1412020-BS1
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 27
Date Collected: 12/3/2014 11:45:29 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: 1412020-BS1

Analyte	Back Pressure	Flow
All	248.0 kPa	0.80 L/min

Mean Data: 1412020-BS1

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2276493.4	99.68	%	0.277				0.28%
Sc Radial	339346.9	99.70	%	0.786				0.79%
Ag 328.068†	5534.9	100.9	ug/L	0.88	100.9	ug/L	0.88	0.87%
Al 396.153†	56267.6	10410	ug/L	70.3	10410	ug/L	70.3	0.68%
As 193.696†	7.8	101.4	ug/L	17.51	101.4	ug/L	17.51	17.26%
Ba 233.527†	832.3	101.1	ug/L	1.23	101.1	ug/L	1.23	1.22%
Be 313.107†	34054.7	102.7	ug/L	0.63	102.7	ug/L	0.63	0.61%
B 249.677†	-79.9	-10.44	ug/L	0.243	-10.44	ug/L	0.243	2.33%
Ca 317.933†	19607.5	10290	ug/L	11.5	10290	ug/L	11.5	0.11%
Cd 214.440†	241.7	102.6	ug/L	1.57	102.6	ug/L	1.57	1.53%
Co 228.616†	322.0	99.98	ug/L	2.384	99.98	ug/L	2.384	2.38%
Cr 267.716†	450.0	98.83	ug/L	0.716	98.83	ug/L	0.716	0.72%
Cu 324.752†	16546.3	95.53	ug/L	0.672	95.53	ug/L	0.672	0.70%
Fe 238.204†	576.3	10330	ug/L	119.0	10330	ug/L	119.0	1.15%
K 766.490†	22492.8	10530	ug/L	106.5	10530	ug/L	106.5	1.01%
Mg 285.213†	50702.6	10390	ug/L	49.8	10390	ug/L	49.8	0.48%
Mn 257.610†	11218.5	102.1	ug/L	0.54	102.1	ug/L	0.54	0.53%
Mo 202.031†	49.3	100.3	ug/L	5.97	100.3	ug/L	5.97	5.95%
Na 589.592†	77750.2	10450	ug/L	96.8	10450	ug/L	96.8	0.93%
Ni 231.604†	245.6	104.2	ug/L	1.55	104.2	ug/L	1.55	1.49%
Pb 220.353†	44.9	99.09	ug/L	5.170	99.09	ug/L	5.170	5.22%
Sb 206.836†	27.2	108.3	ug/L	11.01	108.3	ug/L	11.01	10.17%
Se 196.026†	39.3	492.3	ug/L	24.56	492.3	ug/L	24.56	4.99%
SiO2 251.603†	-128.1	-54.06	ug/L	1.524	-54.06	ug/L	1.524	2.82%
Sr 421.552†	1656129.0	536.9	ug/L	1.00	536.9	ug/L	1.00	0.19%
Ti 334.940†	-67.7	-0.353	ug/L	0.0208	-0.353	ug/L	0.0208	5.91%
Tl 190.801†	29.8	112.3	ug/L	5.56	112.3	ug/L	5.56	4.95%
V 290.880†	2267.2	95.04	ug/L	0.918	95.04	ug/L	0.918	0.97%
Zn 206.200†	78.9	100.00	ug/L	2.016	100.00	ug/L	2.016	2.02%

Matrix Recovery Check: 1412020-BS1

Analyte	Expected Conc.	Measured Conc.	Std. Dev.	Units	Recovery (%)
Al 396.153	10100	10410	70.297	ug/L	103.1
Ca 317.933	10110	10290	11.499	ug/L	101.8
Fe 238.204	10150	10330	118.974	ug/L	101.7
K 766.490	10120	10530	106.502	ug/L	104.0
Mg 285.213	10090	10390	49.771	ug/L	102.9
Na 589.592	10110	10450	96.790	ug/L	103.3
Ag 328.068	100.1	100.9	0.876	ug/L	100.8
As 193.696	102.3	101.4	17.507	ug/L	99.2
Ba 233.527	99.99	101.1	1.231	ug/L	101.1
Be 313.107	100.4	102.7	0.631	ug/L	102.2
Cd 214.440	100.3	102.6	1.574	ug/L	102.3
Co 228.616	99.84	99.98	2.384	ug/L	100.1
Cr 267.716	100.3	98.83	0.716	ug/L	98.5
Cu 324.752	98.58	95.53	0.672	ug/L	97.0
Mn 257.610	99.91	102.1	0.538	ug/L	102.2
Mo 202.031	101.4	100.3	5.972	ug/L	98.9
Ni 231.604	100.6	104.2	1.552	ug/L	103.5
Pb 220.353	103.0	99.09	5.170	ug/L	96.1
Sb 206.836	98.49	108.3	11.011	ug/L	109.8
Se 196.026	494.6	492.3	24.559	ug/L	99.5

SiO2 251.603	4960	-54.06	1.524	ug/L	-0.3
Sr 421.552	500.0	536.9	0.995	ug/L	107.4
Tl 190.801	102.2	112.3	5.561	ug/L	110.1
V 290.880	94.39	95.04	0.918	ug/L	100.6
Zn 206.200	101.0	100.00	2.016	ug/L	99.0

Sequence No.: 11
Sample ID: C141006-02
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 28
Date Collected: 12/3/2014 11:48:32 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: C141006-02

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: C141006-02

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2193867.6	96.07	%	0.608				0.63%
Sc Radial	330474.7	97.10	%	0.832				0.86%
Ag 328.068†	-8.7	0.0819	ug/L	0.08099	0.0819	ug/L	0.08099	98.92%
Al 396.153†	468.2	10.48	ug/L	12.391	10.48	ug/L	12.391	118.22%
As 193.696†	-2.0	-25.14	ug/L	17.230	-25.14	ug/L	17.230	68.55%
Ba 233.527†	838.5	100.7	ug/L	0.60	100.7	ug/L	0.60	0.60%
Be 313.107†	130.7	0.0451	ug/L	0.03876	0.0451	ug/L	0.03876	85.92%
B 249.677†	-183.7	-23.98	ug/L	0.347	-23.98	ug/L	0.347	1.45%
Ca 317.933†	457742.8	240700	ug/L	2301.0	240700	ug/L	2301.0	0.96%
Cd 214.440†	-4.3	-1.682	ug/L	0.7886	-1.682	ug/L	0.7886	46.87%
Co 228.616†	4.3	2.043	ug/L	0.8312	2.043	ug/L	0.8312	40.68%
Cr 267.716†	-6.5	-0.7460	ug/L	0.30382	-0.7460	ug/L	0.30382	40.73%
Cu 324.752†	-5.8	-0.4142	ug/L	0.07523	-0.4142	ug/L	0.07523	18.16%
Fe 238.204†	3.5	47.48	ug/L	43.440	47.48	ug/L	43.440	91.49%
K 766.490†	4733.2	2277	ug/L	5.1	2277	ug/L	5.1	0.22%
Mg 285.213†	102825.3	21060	ug/L	92.6	21060	ug/L	92.6	0.44%
Mn 257.610†	243313.8	2222	ug/L	6.3	2222	ug/L	6.3	0.28%
Mo 202.031†	2.7	1.416	ug/L	8.6874	1.416	ug/L	8.6874	613.46%
Na 589.592†	74043.0	9961	ug/L	17.9	9961	ug/L	17.9	0.18%
Ni 231.604†	13.8	4.311	ug/L	1.7568	4.311	ug/L	1.7568	40.75%
Pb 220.353†	-7.8	-9.345	ug/L	10.1609	-9.345	ug/L	10.1609	108.73%
Sb 206.836†	-0.6	-4.478	ug/L	2.8752	-4.478	ug/L	2.8752	64.20%
Se 196.026†	9.3	94.54	ug/L	54.260	94.54	ug/L	54.260	57.39%
SiO2 251.603†	63451.6	17720	ug/L	85.6	17720	ug/L	85.6	0.48%
Sr 421.552†	Saturated2							
Ti 334.940†	165.6	0.863	ug/L	0.2965	0.863	ug/L	0.2965	34.35%
Tl 190.801†	-0.9	-14.42	ug/L	8.190	-14.42	ug/L	8.190	56.80%
V 290.880†	-2.5	-4.147	ug/L	0.7621	-4.147	ug/L	0.7621	18.38%
Zn 206.200†	151.0	196.9	ug/L	4.23	196.9	ug/L	4.23	2.15%

Sequence No.: 12
Sample ID: 1412020-DUP1
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 29
Date Collected: 12/3/2014 11:52:35 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: 1412020-DUP1

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: 1412020-DUP1

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2192499.5	96.01	%	0.467				0.49%
Sc Radial	329794.1	96.90	%	1.320				1.36%
Ag 328.068†	12.4	0.4548	ug/L	0.11837	0.4548	ug/L	0.11837	26.03%
Al 396.153†	524.2	21.11	ug/L	1.925	21.11	ug/L	1.925	9.12%
As 193.696†	-4.0	-46.71	ug/L	31.030	-46.71	ug/L	31.030	66.43%
Ba 233.527†	836.2	100.4	ug/L	1.02	100.4	ug/L	1.02	1.01%
Be 313.107†	82.1	-0.1017	ug/L	0.06724	-0.1017	ug/L	0.06724	66.11%
B 249.677†	-190.7	-24.90	ug/L	0.112	-24.90	ug/L	0.112	0.45%
Ca 317.933†	457645.1	240700	ug/L	5290.5	240700	ug/L	5290.5	2.20%
Cd 214.440†	-4.2	-1.642	ug/L	0.6970	-1.642	ug/L	0.6970	42.44%
Co 228.616†	-0.4	0.6032	ug/L	0.75888	0.6032	ug/L	0.75888	125.80%
Cr 267.716†	-3.5	-0.0743	ug/L	0.54729	-0.0743	ug/L	0.54729	736.63%
Cu 324.752†	-7.7	-0.4279	ug/L	0.04125	-0.4279	ug/L	0.04125	9.64%
Fe 238.204†	4.0	55.73	ug/L	37.370	55.73	ug/L	37.370	67.06%
K 766.490†	4830.0	2322	ug/L	21.7	2322	ug/L	21.7	0.93%
Mg 285.213†	103970.6	21300	ug/L	390.7	21300	ug/L	390.7	1.83%
Mn 257.610†	242524.2	2215	ug/L	3.9	2215	ug/L	3.9	0.17%
Mo 202.031†	0.8	-2.428	ug/L	7.2472	-2.428	ug/L	7.2472	298.46%
Na 589.592†	75510.6	10160	ug/L	121.8	10160	ug/L	121.8	1.20%
Ni 231.604†	11.8	3.439	ug/L	1.1112	3.439	ug/L	1.1112	32.31%
Pb 220.353†	-4.4	-1.799	ug/L	17.4582	-1.799	ug/L	17.4582	970.17%
Sb 206.836†	0.8	1.415	ug/L	12.2329	1.415	ug/L	12.2329	864.65%
Se 196.026†	6.1	54.19	ug/L	48.791	54.19	ug/L	48.791	90.04%
SiO2 251.603†	63277.4	17670	ug/L	128.7	17670	ug/L	128.7	0.73%
Sr 421.552†	Saturated2							
Ti 334.940†	144.0	0.750	ug/L	0.0599	0.750	ug/L	0.0599	7.99%
Tl 190.801†	-0.8	-13.87	ug/L	8.745	-13.87	ug/L	8.745	63.04%
V 290.880†	-17.6	-4.810	ug/L	0.6152	-4.810	ug/L	0.6152	12.79%
Zn 206.200†	154.3	201.3	ug/L	3.97	201.3	ug/L	3.97	1.97%

Duplicate Check: 1412020-DUP1

Analyte	Expected Conc.	Measured Conc.	Std. Dev.	Units	Difference (%)
Sc Radial	97.10	96.90	1.320	%	0.2
Al 396.153	10.48	21.11	1.925	ug/L	67.3
Ca 317.933	240700	240700	5290.470	ug/L	0.0
Fe 238.204	47.48	55.73	37.370	ug/L	16.0
K 766.490	2277	2322	21.692	ug/L	2.0
Mg 285.213	21060	21300	390.730	ug/L	1.1
Na 589.592	9961	10160	121.754	ug/L	2.0
Sc Axial	96.07	96.01	0.467	%	0.1
Ag 328.068	0.0819	0.4548	0.118	ug/L	139.0
As 193.696	-25.14	-46.71	31.030	ug/L	-60.1
Ba 233.527	100.7	100.4	1.016	ug/L	0.3
Be 313.107	0.0451	-0.1017	0.067	ug/L	-518.8
B 249.677	-23.98	-24.90	0.112	ug/L	-3.8
Cd 214.440	-1.682	-1.642	0.697	ug/L	-2.4
Co 228.616	2.043	0.6032	0.759	ug/L	108.8
Cr 267.716	-0.7460	-0.0743	0.547	ug/L	-163.8
Cu 324.752	-0.4142	-0.4279	0.041	ug/L	-3.2
Mn 257.610	2222	2215	3.860	ug/L	0.3
Mo 202.031	1.416	-2.428	7.247	ug/L	-759.7
Ni 231.604	4.311	3.439	1.111	ug/L	22.5

Pb 220.353	-9.345	-1.799	17.458	ug/L	-135.4
Sb 206.836	-4.478	1.415	12.233	ug/L	-384.7
Se 196.026	94.54	54.19	48.791	ug/L	54.3
SiO2 251.603	17720	17670	128.709	ug/L	0.3
Sr 421.552			0.000	ug/L	Not calculated
Ti 334.940	0.863	0.750	0.060	ug/L	14.0
Tl 190.801	-14.42	-13.87	8.745	ug/L	-3.9
V 290.880	-4.147	-4.810	0.615	ug/L	-14.8
Zn 206.200	196.9	201.3	3.973	ug/L	2.2

Sequence No.: 13
Sample ID: SEQ-SRD1 @5X
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution: 5X

Autosampler Location: 30
Date Collected: 12/3/2014 11:56:37 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-SRD1 @5X

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: SEQ-SRD1 @5X

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2278494.5	99.77	%	0.374				0.38%
Sc Radial	339732.8	99.82	%	0.463				0.46%
Ag 328.068†	5.3	1.141	ug/L	0.1228	5.707	ug/L	0.6140	10.76%
Al 396.153†	101.6	17.02	ug/L	1.749	85.11	ug/L	8.743	10.27%
As 193.696†	1.6	15.42	ug/L	20.834	77.10	ug/L	104.168	135.10%
Ba 233.527†	170.7	19.99	ug/L	0.021	99.97	ug/L	0.106	0.11%
Be 313.107†	120.6	0.2618	ug/L	0.07817	1.309	ug/L	0.3909	29.86%
B 249.677†	-113.5	-14.82	ug/L	0.204	-74.10	ug/L	1.020	1.38%
Ca 317.933†	87855.8	46200	ug/L	211.8	231000	ug/L	1058.9	0.46%
Cd 214.440†	1.0	0.4510	ug/L	1.33662	2.255	ug/L	6.6831	296.36%
Co 228.616†	1.8	0.7043	ug/L	0.69269	3.521	ug/L	3.4634	98.35%
Cr 267.716†	-0.9	0.2893	ug/L	0.31791	1.447	ug/L	1.5896	109.87%
Cu 324.752†	-118.2	-0.3980	ug/L	0.06629	-1.990	ug/L	0.3314	16.66%
Fe 238.204†	-0.0	-6.647	ug/L	43.0227	-33.23	ug/L	215.113	647.27%
K 766.490†	933.1	392.8	ug/L	12.28	1964	ug/L	61.4	3.13%
Mg 285.213†	20101.3	4117	ug/L	15.4	20590	ug/L	77.1	0.37%
Mn 257.610†	49792.1	454.5	ug/L	3.28	2273	ug/L	16.4	0.72%
Mo 202.031†	5.8	11.72	ug/L	5.308	58.58	ug/L	26.541	45.31%
Na 589.592†	14396.9	1927	ug/L	7.5	9636	ug/L	37.6	0.39%
Ni 231.604†	5.4	2.418	ug/L	1.7720	12.09	ug/L	8.860	73.27%
Pb 220.353†	-4.7	-10.85	ug/L	5.014	-54.25	ug/L	25.070	46.21%
Sb 206.836†	-0.3	-4.122	ug/L	11.0531	-20.61	ug/L	55.265	268.13%
Se 196.026†	0.3	2.029	ug/L	55.4385	10.14	ug/L	277.192	>999.9%
SiO2 251.603†	12084.5	3359	ug/L	20.6	16790	ug/L	103.0	0.61%
Sr 421.552†	2169668.3	704.0	ug/L	1.43	3520	ug/L	7.1	0.20%
Ti 334.940†	-0.9	-0.004	ug/L	0.0319	-0.022	ug/L	0.1594	710.20%
Tl 190.801†	3.8	10.94	ug/L	7.764	54.70	ug/L	38.822	70.97%
V 290.880†	-49.9	-4.169	ug/L	0.3030	-20.84	ug/L	1.515	7.27%
Zn 206.200†	31.8	39.95	ug/L	2.657	199.8	ug/L	13.29	6.65%

Dilution Check: SEQ-SRD1 @5X

Analyte	Expected Conc.	Measured Conc.	Std. Dev.	Units	Difference (%)
Sc Radial	19.42	99.82	0.463	%	414.0
Al 396.153	2.096	17.02	1.749	ug/L	712.0
Ca 317.933	48150	46200	211.775	ug/L	4.1
Fe 238.204	9.496	-6.647	43.023	ug/L	170.0
K 766.490	455.3	392.8	12.277	ug/L	13.7
Mg 285.213	4213	4117	15.412	ug/L	2.3
Na 589.592	1992	1927	7.513	ug/L	3.3
Sc Axial	19.21	99.77	0.374	%	419.3
Ag 328.068	0.0164	1.141	0.123	ug/L	6870.6
As 193.696	-5.027	15.42	20.834	ug/L	-406.7
Ba 233.527	20.13	19.99	0.021	ug/L	0.7
Be 313.107	0.0090	0.2618	0.078	ug/L	2802.2
B 249.677	-4.796	-14.82	0.204	ug/L	-209.0
Cd 214.440	-0.3365	0.4510	1.337	ug/L	-234.0
Co 228.616	0.4086	0.7043	0.693	ug/L	72.4
Cr 267.716	-0.1492	0.2893	0.318	ug/L	-293.9
Cu 324.752	-0.0828	-0.3980	0.066	ug/L	-380.4
Mn 257.610	444.4	454.5	3.276	ug/L	2.3
Mo 202.031	0.2832	11.72	5.308	ug/L	4036.5
Ni 231.604	0.8622	2.418	1.772	ug/L	180.5

Pb 220.353	-1.869	-10.85	5.014	ug/L	-480.5
Sb 206.836	-0.8957	-4.122	11.053	ug/L	-360.2
Se 196.026	18.91	2.029	55.438	ug/L	89.3
SiO2 251.603	3545	3359	20.606	ug/L	5.2
Sr 421.552		704.0	1.425	ug/L	Not calculated
Ti 334.940	0.173	-0.004	0.032	ug/L	102.6
Tl 190.801	-2.884	10.94	7.764	ug/L	-479.4
V 290.880	-0.829	-4.169	0.303	ug/L	-402.7
Zn 206.200	39.39	39.95	2.657	ug/L	1.4

Sequence No.: 14
Sample ID: 1412020-MS1
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 31
Date Collected: 12/3/2014 11:59:41 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: 1412020-MS1

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: 1412020-MS1

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2171061.5	95.07	%	0.478				0.50%
Sc Radial	333788.0	98.07	%	0.267				0.27%
Ag 328.068†	5150.1	93.50	ug/L	0.488	93.50	ug/L	0.488	0.52%
Al 396.153†	57654.6	10580	ug/L	120.8	10580	ug/L	120.8	1.14%
As 193.696†	1.2	28.44	ug/L	24.994	28.44	ug/L	24.994	87.87%
Ba 233.527†	1621.7	196.2	ug/L	0.80	196.2	ug/L	0.80	0.41%
Be 313.107†	34361.2	103.3	ug/L	0.82	103.3	ug/L	0.82	0.79%
B 249.677†	-240.6	-31.42	ug/L	0.354	-31.42	ug/L	0.354	1.13%
Ca 317.933†	462650.0	243300	ug/L	2946.4	243300	ug/L	2946.4	1.21%
Cd 214.440†	232.4	98.83	ug/L	1.951	98.83	ug/L	1.951	1.97%
Co 228.616†	323.0	101.0	ug/L	2.31	101.0	ug/L	2.31	2.29%
Cr 267.716†	443.4	97.78	ug/L	0.676	97.78	ug/L	0.676	0.69%
Cu 324.752†	17621.4	101.0	ug/L	0.79	101.0	ug/L	0.79	0.78%
Fe 238.204†	571.0	10220	ug/L	75.8	10220	ug/L	75.8	0.74%
K 766.490†	27911.9	13170	ug/L	155.8	13170	ug/L	155.8	1.18%
Mg 285.213†	149981.4	30730	ug/L	298.7	30730	ug/L	298.7	0.97%
Mn 257.610†	245325.5	2240	ug/L	8.2	2240	ug/L	8.2	0.36%
Mo 202.031†	46.8	90.88	ug/L	6.241	90.88	ug/L	6.241	6.87%
Na 589.592†	150620.9	20260	ug/L	234.9	20260	ug/L	234.9	1.16%
Ni 231.604†	248.9	103.7	ug/L	1.11	103.7	ug/L	1.11	1.07%
Pb 220.353†	37.8	92.63	ug/L	10.186	92.63	ug/L	10.186	11.00%
Sb 206.836†	23.5	93.12	ug/L	8.994	93.12	ug/L	8.994	9.66%
Se 196.026†	46.4	557.5	ug/L	54.21	557.5	ug/L	54.21	9.72%
SiO2 251.603†	62300.4	17400	ug/L	96.0	17400	ug/L	96.0	0.55%
Sr 421.552†	Saturated2							
Ti 334.940†	60.4	0.315	ug/L	0.0843	0.315	ug/L	0.0843	26.76%
Tl 190.801†	25.9	88.08	ug/L	5.578	88.08	ug/L	5.578	6.33%
V 290.880†	2409.6	98.21	ug/L	0.839	98.21	ug/L	0.839	0.85%
Zn 206.200†	218.5	283.2	ug/L	2.90	283.2	ug/L	2.90	1.02%

Matrix Recovery Check: 1412020-MS1

Analyte	Expected Conc.	Measured Conc.	Std. Dev.	Units	Recovery (%)
Al 396.153	10110	10580	120.829	ug/L	104.7
Ca 317.933	250800	243300	2946.414	ug/L	25.4
Fe 238.204	10150	10220	75.835	ug/L	100.7
K 766.490	12380	13170	155.816	ug/L	107.8
Mg 285.213	31160	30730	298.705	ug/L	95.7
Na 589.592	20060	20260	234.881	ug/L	102.0
Ag 328.068	100.1	93.50	0.488	ug/L	93.4
As 193.696	74.86	28.44	24.994	ug/L	53.6
Ba 233.527	200.7	196.2	0.802	ug/L	95.5
Be 313.107	100.0	103.3	0.821	ug/L	103.3
Cd 214.440	98.32	98.83	1.951	ug/L	100.5
Co 228.616	102.0	101.0	2.312	ug/L	98.9
Cr 267.716	99.25	97.78	0.676	ug/L	98.5
Cu 324.752	99.59	101.0	0.791	ug/L	101.5
Mn 257.610	2322	2240	8.167	ug/L	18.1
Mo 202.031	101.4	90.88	6.241	ug/L	89.5
Ni 231.604	104.3	103.7	1.112	ug/L	99.4
Pb 220.353	90.66	92.63	10.186	ug/L	102.0
Sb 206.836	95.52	93.12	8.994	ug/L	97.6
Se 196.026	594.5	557.5	54.207	ug/L	92.6

SiO2 251.603	22720	17400	96.006	ug/L	-6.5
Tl 190.801	85.58	88.08	5.578	ug/L	102.5
V 290.880	95.85	98.21	0.839	ug/L	102.4
Zn 206.200	296.9	283.2	2.900	ug/L	86.2

Sequence No.: 15
Sample ID: C141006-04
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 32
Date Collected: 12/3/2014 12:03:44 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: C141006-04

Analyte	Back Pressure	Flow
All	249.0 kPa	0.80 L/min

Mean Data: C141006-04

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2210055.9	96.77	%	0.205				0.21%
Sc Radial	332220.0	97.61	%	1.246				1.28%
Ag 328.068†	-2.8	0.2270	ug/L	0.08344	0.2270	ug/L	0.08344	36.75%
Al 396.153†	706.1	58.43	ug/L	4.121	58.43	ug/L	4.121	7.05%
As 193.696†	-2.2	-26.16	ug/L	13.031	-26.16	ug/L	13.031	49.82%
Ba 233.527†	153.4	16.71	ug/L	0.054	16.71	ug/L	0.054	0.32%
Be 313.107†	208.2	0.2904	ug/L	0.02350	0.2904	ug/L	0.02350	8.09%
B 249.677†	-237.1	-30.96	ug/L	0.194	-30.96	ug/L	0.194	0.63%
Ca 317.933†	440264.3	231500	ug/L	3704.0	231500	ug/L	3704.0	1.60%
Cd 214.440†	53.8	23.05	ug/L	1.532	23.05	ug/L	1.532	6.65%
Co 228.616†	14.3	5.079	ug/L	0.5888	5.079	ug/L	0.5888	11.59%
Cr 267.716†	-5.6	-0.6414	ug/L	0.57808	-0.6414	ug/L	0.57808	90.13%
Cu 324.752†	1384.5	7.685	ug/L	0.0421	7.685	ug/L	0.0421	0.55%
Fe 238.204†	22.0	378.4	ug/L	12.03	378.4	ug/L	12.03	3.18%
K 766.490†	4340.8	2081	ug/L	20.1	2081	ug/L	20.1	0.97%
Mg 285.213†	99124.0	20310	ug/L	233.1	20310	ug/L	233.1	1.15%
Mn 257.610†	256323.5	2341	ug/L	1.6	2341	ug/L	1.6	0.07%
Mo 202.031†	6.7	9.713	ug/L	6.5341	9.713	ug/L	6.5341	67.27%
Na 589.592†	74348.9	10000	ug/L	90.7	10000	ug/L	90.7	0.91%
Ni 231.604†	31.3	11.83	ug/L	1.043	11.83	ug/L	1.043	8.82%
Pb 220.353†	-6.2	-6.309	ug/L	11.3973	-6.309	ug/L	11.3973	180.65%
Sb 206.836†	-0.3	-3.599	ug/L	15.4590	-3.599	ug/L	15.4590	429.56%
Se 196.026†	4.8	39.36	ug/L	41.400	39.36	ug/L	41.400	105.19%
SiO2 251.603†	54919.7	15340	ug/L	31.9	15340	ug/L	31.9	0.21%
Sr 421.552†	Saturated2							
Ti 334.940†	52.7	0.275	ug/L	0.0743	0.275	ug/L	0.0743	27.05%
Tl 190.801†	-2.3	-20.51	ug/L	16.068	-20.51	ug/L	16.068	78.36%
V 290.880†	-15.4	-4.849	ug/L	0.2308	-4.849	ug/L	0.2308	4.76%
Zn 206.200†	3618.3	4679	ug/L	12.7	4679	ug/L	12.7	0.27%

Sequence No.: 16
Sample ID: C141006-06
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 33
Date Collected: 12/3/2014 12:07:47 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: C141006-06

Analyte	Back Pressure	Flow
All	251.0 kPa	0.80 L/min

Mean Data: C141006-06

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2188459.5	95.83	%	0.523				0.55%
Sc Radial	330865.9	97.21	%	1.656				1.70%
Ag 328.068†	-4.4	0.3308	ug/L	0.28441	0.3308	ug/L	0.28441	85.97%
Al 396.153†	534.2	21.67	ug/L	6.522	21.67	ug/L	6.522	30.10%
As 193.696†	-7.2	-80.51	ug/L	10.227	-80.51	ug/L	10.227	12.70%
Ba 233.527†	788.1	94.40	ug/L	0.457	94.40	ug/L	0.457	0.48%
Be 313.107†	60.1	-0.1735	ug/L	0.12738	-0.1735	ug/L	0.12738	73.40%
B 249.677†	-113.7	-14.84	ug/L	0.492	-14.84	ug/L	0.492	3.31%
Ca 317.933†	454156.0	238800	ug/L	3835.2	238800	ug/L	3835.2	1.61%
Cd 214.440†	-4.3	-1.696	ug/L	0.5089	-1.696	ug/L	0.5089	30.01%
Co 228.616†	1.5	1.232	ug/L	2.0351	1.232	ug/L	2.0351	165.15%
Cr 267.716†	-4.2	0.0347	ug/L	0.20002	0.0347	ug/L	0.20002	577.18%
Cu 324.752†	46.7	-0.0609	ug/L	0.02428	-0.0609	ug/L	0.02428	39.84%
Fe 238.204†	-0.3	-25.38	ug/L	41.578	-25.38	ug/L	41.578	163.79%
K 766.490†	19652.2	9317	ug/L	155.3	9317	ug/L	155.3	1.67%
Mg 285.213†	116352.5	23840	ug/L	397.1	23840	ug/L	397.1	1.67%
Mn 257.610†	199961.5	1826	ug/L	5.2	1826	ug/L	5.2	0.29%
Mo 202.031†	0.3	-3.456	ug/L	5.6185	-3.456	ug/L	5.6185	162.55%
Na 589.592†	83341.8	11210	ug/L	172.0	11210	ug/L	172.0	1.53%
Ni 231.604†	20.3	7.158	ug/L	1.2682	7.158	ug/L	1.2682	17.72%
Pb 220.353†	-6.9	-7.874	ug/L	8.4360	-7.874	ug/L	8.4360	107.13%
Sb 206.836†	0.2	-1.496	ug/L	2.3099	-1.496	ug/L	2.3099	154.38%
Se 196.026†	4.0	28.89	ug/L	75.196	28.89	ug/L	75.196	260.29%
SiO2 251.603†	79645.6	22240	ug/L	100.2	22240	ug/L	100.2	0.45%
Sr 421.552†	Saturated2							
Ti 334.940†	294.4	1.534	ug/L	0.0548	1.534	ug/L	0.0548	3.57%
Tl 190.801†	-5.8	-33.57	ug/L	8.112	-33.57	ug/L	8.112	24.16%
V 290.880†	44.9	-2.245	ug/L	0.8348	-2.245	ug/L	0.8348	37.18%
Zn 206.200†	50.8	67.03	ug/L	4.834	67.03	ug/L	4.834	7.21%

Sequence No.: 17
Sample ID: Blank
Analyst: S.VanOvermeiren
Initial Sample Wt:
Dilution:

Autosampler Location: 34
Date Collected: 12/3/2014 12:11:50 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: Blank

Analyte	Back Pressure	Flow
All	250.0 kPa	0.80 L/min

Mean Data: Blank

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2330240.5	102.0	%	0.60				0.59%
Sc Radial	343297.0	100.9	%	0.87				0.86%
Ag 328.068†	-0.6	-0.0121	ug/L	0.18090	-0.0121	ug/L	0.18090	>999.9%
Al 396.153†	-24.2	-4.448	ug/L	0.9812	-4.448	ug/L	0.9812	22.06%
As 193.696†	0.7	7.604	ug/L	22.6978	7.604	ug/L	22.6978	298.48%
Ba 233.527†	-0.7	-0.0854	ug/L	0.16331	-0.0854	ug/L	0.16331	191.19%
Be 313.107†	136.3	0.4114	ug/L	0.02737	0.4114	ug/L	0.02737	6.65%
B 249.677†	-23.6	-3.087	ug/L	0.4679	-3.087	ug/L	0.4679	15.16%
Ca 317.933†	25.2	13.24	ug/L	5.463	13.24	ug/L	5.463	41.26%
Cd 214.440†	0.7	0.2814	ug/L	0.08671	0.2814	ug/L	0.08671	30.81%
Co 228.616†	1.2	0.3779	ug/L	0.98491	0.3779	ug/L	0.98491	260.60%
Cr 267.716†	0.3	0.0655	ug/L	0.20975	0.0655	ug/L	0.20975	320.35%
Cu 324.752†	-262.9	-1.505	ug/L	0.1337	-1.505	ug/L	0.1337	8.89%
Fe 238.204†	0.1	2.104	ug/L	13.3894	2.104	ug/L	13.3894	636.45%
K 766.490†	19.7	9.033	ug/L	9.3320	9.033	ug/L	9.3320	103.31%
Mg 285.213†	-67.6	-13.84	ug/L	0.777	-13.84	ug/L	0.777	5.61%
Mn 257.610†	13.5	0.1240	ug/L	0.03092	0.1240	ug/L	0.03092	24.94%
Mo 202.031†	-0.3	-0.5260	ug/L	4.59941	-0.5260	ug/L	4.59941	874.44%
Na 589.592†	13.8	1.852	ug/L	0.5561	1.852	ug/L	0.5561	30.02%
Ni 231.604†	-6.3	-2.693	ug/L	1.0208	-2.693	ug/L	1.0208	37.91%
Pb 220.353†	2.8	6.204	ug/L	3.3295	6.204	ug/L	3.3295	53.67%
Sb 206.836†	-1.2	-4.978	ug/L	4.3875	-4.978	ug/L	4.3875	88.14%
Se 196.026†	-0.1	-0.7014	ug/L	24.59219	-0.7014	ug/L	24.59219	>999.9%
SiO2 251.603†	-146.5	-40.87	ug/L	0.702	-40.87	ug/L	0.702	1.72%
Sr 421.552†	871.7	0.283	ug/L	0.0351	0.283	ug/L	0.0351	12.42%
Ti 334.940†	-21.2	-0.110	ug/L	0.0198	-0.110	ug/L	0.0198	17.93%
Tl 190.801†	2.3	8.919	ug/L	7.5353	8.919	ug/L	7.5353	84.49%
V 290.880†	-113.2	-4.877	ug/L	0.5078	-4.877	ug/L	0.5078	10.41%
Zn 206.200†	-0.3	-0.360	ug/L	3.1240	-0.360	ug/L	3.1240	867.04%

Sequence No.: 18
Sample ID: SEQ-CCV
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 3
Date Collected: 12/3/2014 12:14:52 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-CCV

Analyte	Back Pressure	Flow
All	251.0 kPa	0.80 L/min

Mean Data: SEQ-CCV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2259338.6	98.93	%	0.242				0.24%
Sc Radial	339286.0	99.69	%	1.163				1.17%
Ag 328.068†	13298.1	242.4	ug/L	1.40	242.4	ug/L	1.40	0.58%
QC value within limits for Ag 328.068 Recovery = 96.97%								
Al 396.153†	69205.9	12790	ug/L	196.1	12790	ug/L	196.1	1.53%
QC value within limits for Al 396.153 Recovery = 102.34%								
As 193.696†	244.6	2635	ug/L	28.9	2635	ug/L	28.9	1.10%
QC value within limits for As 193.696 Recovery = 105.40%								
Ba 233.527†	4216.3	514.0	ug/L	2.16	514.0	ug/L	2.16	0.42%
QC value within limits for Ba 233.527 Recovery = 102.79%								
Be 313.107†	171727.7	518.0	ug/L	0.65	518.0	ug/L	0.65	0.13%
QC value within limits for Be 313.107 Recovery = 103.60%								
B 249.677†	39256.9	5125	ug/L	17.6	5125	ug/L	17.6	0.34%
QC value within limits for B 249.677 Recovery = 102.50%								
Ca 317.933†	24334.1	12740	ug/L	114.2	12740	ug/L	114.2	0.90%
QC value within limits for Ca 317.933 Recovery = 101.88%								
Cd 214.440†	1213.1	516.6	ug/L	1.94	516.6	ug/L	1.94	0.38%
QC value within limits for Cd 214.440 Recovery = 103.32%								
Co 228.616†	1672.5	519.9	ug/L	1.70	519.9	ug/L	1.70	0.33%
QC value within limits for Co 228.616 Recovery = 103.97%								
Cr 267.716†	11895.5	2598	ug/L	10.2	2598	ug/L	10.2	0.39%
QC value within limits for Cr 267.716 Recovery = 103.93%								
Cu 324.752†	178264.0	1022	ug/L	2.4	1022	ug/L	2.4	0.23%
QC value within limits for Cu 324.752 Recovery = 102.18%								
Fe 238.204†	733.8	13140	ug/L	187.7	13140	ug/L	187.7	1.43%
QC value within limits for Fe 238.204 Recovery = 105.09%								
K 766.490†	54709.7	25600	ug/L	446.0	25600	ug/L	446.0	1.74%
QC value within limits for K 766.490 Recovery = 102.41%								
Mg 285.213†	63127.3	12930	ug/L	193.6	12930	ug/L	193.6	1.50%
QC value within limits for Mg 285.213 Recovery = 103.42%								
Mn 257.610†	114691.4	1047	ug/L	3.3	1047	ug/L	3.3	0.32%
QC value within limits for Mn 257.610 Recovery = 104.65%								
Mo 202.031†	244.9	498.4	ug/L	5.76	498.4	ug/L	5.76	1.16%
QC value within limits for Mo 202.031 Recovery = 99.67%								
Na 589.592†	95833.0	12800	ug/L	252.6	12800	ug/L	252.6	1.97%
QC value within limits for Na 589.592 Recovery = 102.38%								
Ni 231.604†	6059.0	2598	ug/L	4.2	2598	ug/L	4.2	0.16%
QC value within limits for Ni 231.604 Recovery = 103.94%								
Pb 220.353†	1187.7	2600	ug/L	5.9	2600	ug/L	5.9	0.23%
QC value within limits for Pb 220.353 Recovery = 103.99%								
Sb 206.836†	615.2	2516	ug/L	11.4	2516	ug/L	11.4	0.45%
QC value within limits for Sb 206.836 Recovery = 100.66%								
Se 196.026†	211.9	2646	ug/L	24.0	2646	ug/L	24.0	0.91%
QC value within limits for Se 196.026 Recovery = 105.86%								
SiO2 251.603†	36774.3	10240	ug/L	44.6	10240	ug/L	44.6	0.44%
QC value within limits for SiO2 251.603 Recovery = 102.43%								
Sr 421.552†	1607489.1	520.6	ug/L	0.99	520.6	ug/L	0.99	0.19%
QC value within limits for Sr 421.552 Recovery = 104.12%								
Ti 334.940†	98723.9	514.5	ug/L	1.82	514.5	ug/L	1.82	0.35%
QC value within limits for Ti 334.940 Recovery = 102.90%								
Tl 190.801†	675.8	2600	ug/L	8.9	2600	ug/L	8.9	0.34%
QC value within limits for Tl 190.801 Recovery = 104.01%								
V 290.880†	23992.4	1030	ug/L	3.6	1030	ug/L	3.6	0.35%
QC value within limits for V 290.880 Recovery = 103.05%								

Zn 206.200†	2023.4	2609 ug/L	2.5	2609 ug/L	2.5	0.10%

QC value within limits for Zn 206.200 Recovery = 104.38%

All analyte(s) passed QC.

Sequence No.: 19
Sample ID: SEQ-CCB
Analyst:
Initial Sample Wt:
Dilution:

Autosampler Location: 1
Date Collected: 12/3/2014 12:17:57 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Nebulizer Parameters: SEQ-CCB

Analyte	Back Pressure	Flow
All	251.0 kPa	0.80 L/min

Mean Data: SEQ-CCB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sc Axial	2337837.6	102.4	%	0.19				0.19%
Sc Radial	344130.9	101.1	%	1.10				1.09%
Ag 328.068†	10.3	0.1855	ug/L	0.16189	0.1855	ug/L	0.16189	87.26%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Al 396.153†	11.6	2.064	ug/L	1.4117	2.064	ug/L	1.4117	68.40%
QC value within limits for Al 396.153 Recovery = Not calculated								
As 193.696†	1.2	13.01	ug/L	5.402	13.01	ug/L	5.402	41.51%
QC value within limits for As 193.696 Recovery = Not calculated								
Ba 233.527†	2.1	0.2521	ug/L	0.01989	0.2521	ug/L	0.01989	7.89%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.107†	135.3	0.4080	ug/L	0.06424	0.4080	ug/L	0.06424	15.74%
QC value within limits for Be 313.107 Recovery = Not calculated								
B 249.677†	113.2	14.78	ug/L	1.962	14.78	ug/L	1.962	13.27%
QC value within limits for B 249.677 Recovery = Not calculated								
Ca 317.933†	15.8	8.252	ug/L	3.2947	8.252	ug/L	3.2947	39.92%
QC value within limits for Ca 317.933 Recovery = Not calculated								
Cd 214.440†	0.6	0.2757	ug/L	0.55439	0.2757	ug/L	0.55439	201.11%
QC value within limits for Cd 214.440 Recovery = Not calculated								
Co 228.616†	1.6	0.5120	ug/L	0.50136	0.5120	ug/L	0.50136	97.92%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cr 267.716†	2.6	0.5768	ug/L	0.19921	0.5768	ug/L	0.19921	34.54%
QC value within limits for Cr 267.716 Recovery = Not calculated								
Cu 324.752†	-201.1	-1.150	ug/L	0.0723	-1.150	ug/L	0.0723	6.29%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 238.204†	1.7	29.69	ug/L	4.983	29.69	ug/L	4.983	16.78%
QC value within limits for Fe 238.204 Recovery = Not calculated								
K 766.490†	46.4	21.84	ug/L	4.497	21.84	ug/L	4.497	20.59%
QC value within limits for K 766.490 Recovery = Not calculated								
Mg 285.213†	9.7	1.980	ug/L	1.8948	1.980	ug/L	1.8948	95.70%
QC value within limits for Mg 285.213 Recovery = Not calculated								
Mn 257.610†	18.7	0.1703	ug/L	0.07361	0.1703	ug/L	0.07361	43.21%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 202.031†	0.5	1.016	ug/L	2.7854	1.016	ug/L	2.7854	274.13%
QC value within limits for Mo 202.031 Recovery = Not calculated								
Na 589.592†	49.5	6.621	ug/L	1.3521	6.621	ug/L	1.3521	20.42%
QC value within limits for Na 589.592 Recovery = Not calculated								
Ni 231.604†	-8.1	-3.465	ug/L	0.9152	-3.465	ug/L	0.9152	26.42%
QC value within limits for Ni 231.604 Recovery = Not calculated								
Pb 220.353†	1.8	3.883	ug/L	5.4014	3.883	ug/L	5.4014	139.12%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Sb 206.836†	-0.9	-3.703	ug/L	8.0349	-3.703	ug/L	8.0349	216.99%
QC value within limits for Sb 206.836 Recovery = Not calculated								
Se 196.026†	0.2	2.020	ug/L	27.0392	2.020	ug/L	27.0392	>999.9%
QC value within limits for Se 196.026 Recovery = Not calculated								
SiO2 251.603†	-6.7	-1.931	ug/L	0.4542	-1.931	ug/L	0.4542	23.53%
QC value within limits for SiO2 251.603 Recovery = Not calculated								
Sr 421.552†	224.2	0.071	ug/L	0.0146	0.071	ug/L	0.0146	20.69%
QC value within limits for Sr 421.552 Recovery = Not calculated								
Ti 334.940†	27.9	0.145	ug/L	0.0087	0.145	ug/L	0.0087	6.02%
QC value within limits for Ti 334.940 Recovery = Not calculated								
Tl 190.801†	0.9	3.205	ug/L	3.7947	3.205	ug/L	3.7947	118.42%
QC value within limits for Tl 190.801 Recovery = Not calculated								
V 290.880†	-107.4	-4.616	ug/L	0.3739	-4.616	ug/L	0.3739	8.10%
QC value within limits for V 290.880 Recovery = Not calculated								

Zn 206.200†	-0.6	-0.783 ug/L	3.2749	-0.783 ug/L	3.2749	417.99%

QC value within limits for Zn 206.200 Recovery = Not calculated

All analyte(s) passed QC.

PERKIN ELMER OPTIMA 4300DV ICP-OE

Project(s): Rico-Argentine Oct 2014 Date: 12 / 04 / 2014

Work Order(s): C141006 TDF: A-048 Analyst: S Van Overmeiren

Batch Preparation Information

Digest / Prep: TR / Total / Diss.

Matrix: Water / Soil / Other

Batch ID: 1412012

Data Storage

Data File: X:/Metals Data Files/ A048_1412012_141204

Standard Information

Calibration Std. # 1 = Reagent Blank Solution

SCV: *(LIMS ID: 4020403)*
Prepped: 10/20/14 By: SV

CRQL Stock: *(LIMS ID: 4020501)*
Prepped: 2-04-2014 By: SV

CRQL Daily *(LIMS ID: 4020502)*
Prepped: 12/04/14 By: SV

Calibration Std. # 2 = ESAT High, LIMS: 4020401
Prepped: 10/28/14 By: SV

ICV/CCV: 1:2 of 4020401 *(LIMS ID: 4020402)*
Prepped: 12/04/14 By: SV

ICSA: 4020404 **Prepped: 2-04-2014**

ICSAB: 4020405 Prepped: 2-04-2014

Spike Information

Dissolved Spikes

Sample ID: —

Sample ID: —

Sample vol: 10 mL

QCS-3 : 100 uL
Exp: 2-1-2015 (LIMS ID: 4012234)

Salt Spike: 100 uL
Prepped 2-04-2014 *(LIMS ID: 4020314)*

Tot. / Tot. Rec. Spikes

Sample ID: C141006-01

Sample Vol: 50 mL

WW-LFS1: 500 uL
Exp: 2-1-2015 *(LIMS ID: 4012235)*

WW-LFS2: 500 uL
Exp: 2-1-2015 *(LIMS ID: 4012236)*

Comments / Maintenance

Replace Nebulizer? Y / N New pump tubing? Y / N Replace torch or injector? Y / N

Analytes Reported:

Ag, Al, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, K, Mg,

Mn, Mo, Na, Ni, Pb, Sb, Se, SiO2, Sr, Ti, Tl, V, Zn

Sequence ID: 1412031

Lims Entry (Date / Init): 12/04/14SV