



## TABLE OF CONTENTS FOR QC III+ DATA PACKAGE

LABORATORY IDENTIFICATION NUMBER: 1510561

### SECTION 1.

3440 South 700 West  
Salt Lake City, UT 84119

CASE NARRATIVE  
CHAIN-OF-CUSTODIES

### SECTION 2.

Phone: (801) 263-8686  
Toll Free: (888) 263-8686  
Fax: (801) 263-8687  
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ANALYTICAL REPORTS

### SECTION 3.

web: [www.awal-labs.com](http://www.awal-labs.com)

BATCH QC REPORTS

### SECTION 4.

Kyle F. Gross  
Laboratory Director

INSTRUMENT QC SUMMARIES

Jose Rocha  
QA Officer

### SECTION 5.

LOGBOOKS, RUNLOGS AND RAW DATA PER  
ANALYSIS

Assembled by:

Reviewed by:

**Melissa  
Connolly**  
Digitally signed by Melissa  
Connolly  
DN: cn=Melissa Connolly,  
o=American West Analytical  
Laboratories, ou,  
email=melissa@awa-labs.com,  
c=US  
Date: 2015.11.30 15:42:43 -07'00'

**Kyle F.  
Gross**  
Digitally signed  
by Kyle F. Gross  
Date: 2015.11.30  
15:50:41 -07'00'



## SECTION 1.

- ❑ CASE NARRATIVE
- ❑ AWAL CHAIN-OF-CUSTODY
- ❑ CLIENT CHAIN-OF-CUSTODY

3440 South 700 West  
Salt Lake City, UT 84119

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Laboratory Director

Jose Rocha  
QA Officer



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Salt Lake City, UT 84119

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

Jim Harris  
Utah Division of Water Quality  
PO Box 144870  
SLC, UT 84114  
TEL: (801) 538-6329

RE: Gold King Mine Spill / 01255.016.03

Dear Jim Harris:

Lab Set ID: 1510561

American West Analytical Laboratories received sample(s) on 10/27/2015 for the analyses presented in the following report.

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,

**Kyle F. Gross**  
Digitally signed  
by Kyle F. Gross  
Date:  
2015.11.30  
15:50:58 -07'00'

Approved by:

Laboratory Director or designee

# American West Analytical Laboratories

**REVISED:** 10/28/2015

D

Samples #2,3,5,6, and 18 taken off hold per Brad. -EH

## WORK ORDER SUMMARY

Work Order: **1510561**  
 Due Date: 11/11/2015

Page 1 of 3

**Client:** Utah Division of Water Quality

**Client ID:** UTD200

**Contact:** Jim Harris

**Project:** Gold King Mine Spill / 01255.016.03

**QC Level:** III+ MDL

**WO Type:** Standard

**Comments:** Email to [loraras@utah.gov](mailto:loraras@utah.gov). / CC Brad Martin QC 3+ / 10-28-15 proceed with analysis for Samples #2, #3, #4, #5, & #6 per Brad. Also #18 for nutrient list attached. Footnote report: pH, TSS, & TDS received outside of hold. Include EDD;

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage
1510561-001A	GK02-ST-19	10/18/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-002A	GK02-ST-20	10/19/2015 0000h	10/27/2015 1530h	200.7-W 6 SEL Analytes: AL CA FE MG K NA	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
				200.7-W-PR		<input type="checkbox"/>	DF-Metals
				200.8-W 17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN		<input checked="" type="checkbox"/>	DF-Metals
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals
1510561-003A	GK02-ST-21	10/19/2015 1200h	10/27/2015 1530h	200.7-W 6 SEL Analytes: AL CA FE MG K NA	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
				200.7-W-PR		<input type="checkbox"/>	DF-Metals
				200.8-W 17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN		<input checked="" type="checkbox"/>	DF-Metals
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals
1510561-004A	GK02-ST-22	10/20/2015 0000h	10/27/2015 1530h	200.7-W 6 SEL Analytes: AL CA FE MG K NA	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
				200.7-W-PR		<input type="checkbox"/>	DF-Metals
				200.8-W 17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN		<input checked="" type="checkbox"/>	DF-Metals
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals
1510561-005A	GK02-ST-23	10/20/2015 1200h	10/27/2015 1530h	200.7-W 6 SEL Analytes: AL CA FE MG K NA	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals

Printed: 11/25/2015

FOR LABORATORY USE ONLY (fill out on page 1):

%M  RT  CN  TAT  QC  HOK\_ \_ \_ \_ \_ HOK\_ \_ \_ \_ \_ HOK\_ \_ \_ \_ \_ COC Emailed\_ \_ \_ \_ \_

# WORK ORDER SUMMARY

Client: Utah Division of Water Quality

Work Order: 1510561

Page 2 of 3

Due Date: 11/11/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage
1510561-005A	GK02-ST-23	10/20/2015 1200h	10/27/2015 1530h	200.7-W-PR	Aqueous	<input type="checkbox"/>	DF-Metals
				200.8-W		<input checked="" type="checkbox"/>	DF-Metals
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN			
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals
1510561-006A	GK02-ST-24	10/21/2015 0000h	10/27/2015 1530h	200.7-W	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
				6 SEL Analytes: AL CA FE MG K NA			
				200.7-W-PR		<input type="checkbox"/>	DF-Metals
				200.8-W		<input checked="" type="checkbox"/>	DF-Metals
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN			
				200.8-W-PR		<input type="checkbox"/>	DF-Metals
				HG-DW-245.1		<input type="checkbox"/>	DF-Metals
				HG-DW-PR		<input type="checkbox"/>	DF-Metals
1510561-007A	GK03-ST-01	10/9/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-008A	GK03-ST-02	10/10/2015 0000h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-009A	GK03-ST-03	10/10/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-010A	GK03-ST-04	10/11/2015 0000h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-011A	GK03-ST-05	10/11/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-012A	GK03-ST-06	10/12/2015 0000h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-013A	GK03-ST-07	10/12/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-014A	GK03-ST-08	10/13/2015 0000h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-015A	GK03-ST-09	10/13/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-016A	GK03-ST-10	10/14/2015 0000h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-017A	GK03-ST-11	10/14/2015 1200h	10/27/2015 1520h		Aqueous	<input type="checkbox"/>	DF-Hold
1510561-018A	GK03-ST-12	10/15/2015 0000h	10/27/2015 1520h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	DF-WC
				2 SEL Analytes: CL SO4			
				3005A-ICPMS-PR		<input type="checkbox"/>	DF-WC
				ALK-W-2320B		<input checked="" type="checkbox"/>	DF-WC
				3 SEL Analytes: ALK ALKB ALKC			
				COND-W-2510B		<input type="checkbox"/>	DF-WC
				HARD-2340B		<input type="checkbox"/>	DF-WC
				NO2/NO3-W-353.2		<input type="checkbox"/>	DF-WC
				PH-4500H+B		<input type="checkbox"/>	DF-WC
				PO4-W-4500PF		<input type="checkbox"/>	DF-WC

Printed: 11/25/2015 FOR LABORATORY USE ONLY (fill out on page 1): %M  RT  CN  TAT  QC  HOK\_---- HOK\_---- HOK\_---- COC Emilled\_-----

# WORK ORDER SUMMARY

Work Order: **1510561** Page 3 of 3

Client: Utah Division of Water Quality

Due Date: 11/11/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage
1510561-018A	GK03-ST-12	10/15/2015 0000h	10/27/2015 1520h	PO4-W-PR	Aqueous	<input type="checkbox"/>	DF-WC
				TDS-W-2540C		<input type="checkbox"/>	DF-WC
				TSS-W-2540D		<input type="checkbox"/>	DF-WC

**American West Analytical Laboratories**

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 www.awal-labs.com

**CHAIN OF CUSTODY**

6.7

1510561  
 AWAL Lab Sample Set #  
 Page 1 of 2

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analysis lists and reporting limits (PL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

QC Level:	Turn Around Time:	Dup Date:	
1 2 2+ 3 3+ 4 5	1 2 3 4 5 Std	1510561	AWAL Lab Sample Set #
1	2	3	4
2	3	4	5
2+	3	4	5
3	4	5	Std
3+	4	5	Std
4	5	Std	
5	Std		
Sample Matrix	# of Containers	Time Sampled	Date Sampled
Total Metals	2	1200	10/18/15
260-8: Sb, As, Ba, Be, Cd, Cr, Pb	1	0000	10/19/15
260-7: Al, Ca, Fe, K, Mg, Na, Ni	1	1200	10/19/15
	1	0000	10/20/15
	1	1200	10/20/15
	1	0000	10/21/15
	1	1200	10/19/15
	1	0000	10/16/15
	1	1200	10/16/15
	1	0000	10/11/15
	1	1200	10/11/15
	1	0000	10/12/15
	1	1200	10/12/15
	1	0000	10/22/15
	1	1200	10/22/15

Unless other arrangements have been made, signed reports will be emailed by 5:00 pm on the day they are due.

Report down to the MDL  
 Include EDD  
 Lab Filler for:

Field Filtered For:

For Compliance With:  
 NELAP  
 RCRA  
 CWA  
 SDWA  
 ELAP / A2LA  
 NLLAP  
 Non-Compliance  
 Other:

Known Hazards & Sample Comments

Received With: Mc 11/23/15

Handwritten: Analyses added outside of hold.

COC Table Was:  
 1. Present on Outer Package  Y  
 2. Unbroken on Outer Package  Y  
 3. Present on Sample  Y  
 4. Unbroken on Sample  Y

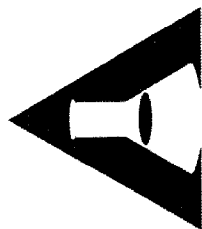
Discrepancies Between Sample Labels and COC Record?  Y

Special Instructions:  
Hold for Analysis  
\* 10/28/15 samples taken  
if hold for total metals, run  
Print: ad

Relinquished by: Paul Young Signature  
 Date: 10/22/15 Time: 1100

Received by: Yessica Aguilar Signature  
 Date: 10/27/15 Time: 1320

Client: State of UT / TechLaw Inc  
 Address: 195 N. 1956 West  
 Contact: BLE, UT, 84119  
 Phone #: Jim Harris (801) 263-8686 Cell #: 630 697 5407  
 Project Name: Gold King Mine Spill  
 Project #: 01255.1.0616.03  
 PO #: TechLaw Inc



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 www.awal-labs.com

Client: State of UT / TechLaw Inc  
 Address: 195 N. 1950 West  
 Contact: SLC, UT, 84119  
 Phone #: 801 536 4360 Cell #: 6830 697 5407  
 Project Name: Gold King Mine Spill  
 Project #: 01255.14016.03  
 PO #: TechLaw Inc

**CHAIN OF CUSTODY**

AWAL Lab Sample Set # 1510561  
 Page 2 of 2

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analysis files and reporting limits (PCL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

Sample ID	Date Sampled	Time Sampled	Turn Around Time:					QC Level:	Turn Around Time:	Due Date:
			1	2	3	3+	4			
13 GK03-ST-07	10/12/15	1200	✓							
14 GK03-ST-08	10/13/15	0000								
15 GK03-ST-09	10/15/15	1200								
16 GK03-ST-10	10/14/15	0000								
17 GK03-ST-11	10/14/15	1200								
18* GK03-ST-12	10/15/15	0000								

Relinquished by:		Received by:	
Signature: <u>Paul Young</u>	Signature: <u>[Signature]</u>	Date: <u>10/22/15</u>	Date: <u>10/22/15</u>
Print Name: <u>Paul Young</u>	Print Name: <u>[Signature]</u>	Time: <u>1400</u>	Time: <u>15:30</u>
Relinquished by:	Relinquished by:	Date:	Date:
Signature:	Signature:	Time:	Time:
Relinquished by:	Relinquished by:	Date:	Date:
Signature:	Signature:	Time:	Time:
Relinquished by:	Relinquished by:	Date:	Date:
Signature:	Signature:	Time:	Time:
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Signature:	Signature:	Time:	Time:
Relinquished by:	Relinquished by:	Date:	Date:
Signature:	Signature:	Time:	Time:

Special Instructions: Hold for Analysis

Unless other arrangements have been made, signed reports will be emailed by **5:00 pm** on the day they are due.

Report down to the MDL  
 Include EDD  
 Lab Filler for:  
 Field Filtered For:

For Compliance With:  
 NELAP  
 RCRA  
 CWA  
 SDWA  
 ELAP / A2LA  
 NLLAP  
 Non-Compliance  
 Other:

Known Hazards & Sample Comments

Samples W/ere:  
 1. Shipped or hand delivered  
 2. Ambient or Cooled  
 3. Temperature 6.7 °C  
 4. Received Broken/Leaking (Improperly Sealed)  
 5. Properly Preserved  
 6. Received Within Holding Time  
 7. Analyzes added outside of hold.

COC Tests W/ere:  
 1. Present on Outer Packaging  
 2. Unbroken on Outer Packaging  
 3. Present on Sample  
 4. Unbroken on Sample

Discrepancies Between Sample Labels and COC Records?



## Elona Hayward

---

**From:** Rebekah Winkler  
**Sent:** Wednesday, October 28, 2015 6:40 AM  
**To:** Elona Hayward  
**Subject:** FW: TechLaw - Gold King Mine samples - samples received 10/27/15  
**Attachments:** Utah COCs 10-23-15.pdf

Take off hold/add analysis for TechLaw's samples received yesterday.

---

**From:** Martin, Bradley [<mailto:BMartin@TechLawInc.com>]  
**Sent:** Wednesday, October 28, 2015 6:29 AM  
**To:** Rebekah Winkler  
**Subject:** TechLaw - Gold King Mine samples - samples received 10/27/15

Hi Rebekah – For the samples received yesterday I would like the following analyzed for total metals:

GK01-ST-13 10/15/15 1200 ✓  
GK02-ST-13 10/15/15 1200  
GK02-ST-20 10/19/15 0000  
GK02-ST-21 10/19/15 1200  
GK02-ST-22 10/20/15 0000  
GK02-ST-23 10/20/15 1200  
GK02-ST-24 10/21/15 0000  
GK03-ST-13 10/15/15 1200  
GK03-ST-20 10/19/15 0000  
GK03-ST-21 10/19/15 1200  
GK03-ST-22 10/20/15 0000  
GK03-ST-23 10/20/15 1200  
GK03-ST-24 10/21/15 0000  
GK04-ST-13 10/15/15 1200  
GK04-ST-19 10/18/15 1200  
GK04-ST-20 10/19/15 0000  
GK04-ST-21 10/19/15 1200  
GK04-ST-22 10/20/15 0000  
GK04-ST-23 10/20/15 1200  
GK04-ST-24 10/21/15 0000

Also, can we sample the following samples for the nutrient list below (I realize several of the holding time may have expired – it's the nature of this particular sampling method)

GK01-ST-12 10/15/15 0000  
GK02-ST-12 10/15/15 0000  
GK03-ST-12 10/15/15 0000  
GK04-ST-12 10/15/15 0000  
GK05-ST-03 10/11/15 1200

Hardness	2340B
Conductivity	SM2510B
Alkalinity	SM2320B
Anions (Carbonate, Bicarbonate, Sulfate and Chloride)	300.0

Nitrate/Nitrite	353.2
Phosphorus, total	4500-PF
TDS	SM2540C
TSS	SM2540D
pH	9040C

Thanks, Brad

Bradley K. Martin, P.E.  
*TechLaw, Inc.*  
55 West Monroe Street, Suite 3450  
Chicago, IL 60603  
T 312.345.8960  
M 630.697.5407  
[bmartin@techlawinc.com](mailto:bmartin@techlawinc.com)  
[www.techlawinc.com](http://www.techlawinc.com)



## Inorganic Case Narrative

<b>Client:</b>	Utah Division of Water Quality
<b>Contact:</b>	Jim Harris
<b>Project:</b>	Gold King Mine Spill / 01255.016.03
<b>Lab Set ID:</b>	1510561

---

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web: [www.awal-labs.com](http://www.awal-labs.com)

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

### Sample Receipt Information:

<b>Date of Receipt:</b>	10/27/2015
<b>Date of Collection:</b>	10/9-10/21/2015
<b>Date of Analyses Request:</b>	10/28/2015
<b>Sample Condition:</b>	Intact
<b>C-O-C Discrepancies:</b>	None

**Holding Time and Preservation Requirements:** The analysis and preparation of all samples were performed within the method holding times, with the following exceptions: the analyses for test codes PH-4500H+B, TDS-W-2540C, and TSS-W-2540D were received outside of the holding time. All samples were properly preserved.

**Preparation and Analysis Requirements:** The samples were analyzed following the methods stated on the analytical reports. The requested method of 9040C is equivalent to the reported method of SM4500-H+B for pH analysis. The laboratory reported method SM4500-H+B as it is a method applicable to the CWA (Clean Water Act).

**Analytical QC Requirements:** All instrument calibration and calibration check requirements were met. All internal standard recoveries met method criterion.

**Batch QC Requirements:** MB, LCS, MS, MSD, RPD, DUP, PDS, SD:

**Method Blanks (MBs):** No target analytes were detected above the reporting limits, indicating that the procedure was free from contamination. Vanadium and Barium were observed between the MDL and reporting limit on sample MB-40004.

**Laboratory Control Sample (LCSs):** All LCS recoveries were within control limits, indicating that the preparation and analysis were in control.

**Matrix Spike / Matrix Spike Duplicate (MS/MSD):** All percent recoveries and RPDs (Relative Percent Differences) were inside established limits, with the following exceptions:

Sample ID	Analyte	QC	Explanation
1510561-002A	Aluminum	MS/MSD	High analyte concentration
1510561-002A	Antimony	MS/MSD	Sample matrix interference
1510561-002A	Iron	MS/MSD	High analyte concentration
1510562-001A	Aluminum	MS/MSD	High analyte concentration
1510562-001A	Antimony	MS/MSD/RPD	Sample matrix interference or sample non-homogeneity



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

1510562-001A	Barium	MS/MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Beryllium	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Cadmium	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Iron	MS/MSD	High analyte concentration
1510562-001A	Lead	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Manganese	MS/MSD	Sample matrix interference
1510562-001A	Molybdenum	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Silver	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510562-001A	Thallium	MSD/RPD	Sample matrix interference or sample non-homogeneity
1510561-018A	Phosphate	MS	Sample matrix interference
1510563-021A	Phosphate	MS/MSD/RPD	High analyte concentration
1510566-012A	Phosphate	MS/MSD/RPD	Sample matrix interference or sample non-homogeneity

**Duplicate (DUP):** The parameters that require a duplicate analysis had RPDs within the control limits, with the following exceptions: the RPDs were outside of the control limits on samples 1510561-018A and 1510566-012A and Total Dissolved Solids and Total Suspended Solids due to suspected sample non-homogeneity or matrix interference.

**Post Digestion Spike (PDS):** The PDS percent recoveries were within the control limits, with the following exceptions: the PDS percent recoveries for Aluminum, Calcium, Iron, Magnesium, and Potassium on 1510561-002A and for Aluminum, Calcium, Iron, and Magnesium on 1510562-001A were outside of the control limits due to sample matrix interference.

**Serial Dilution (SD):** The serial dilution RPDs were within the control limits, with the following exceptions: the RPDs for Aluminum, Iron, Magnesium, and Potassium on samples 1510561-002A and 1510562-001A were outside of the control limits due to matrix interference. The analyte concentrations for Antimony, Cadmium, Mercury, Molybdenum, Selenium, Silver, Thallium, and Vanadium on sample 1510561-002A and for Antimony, Molybdenum, Selenium, Silver, and Thallium on sample 1510562-001A were too low for serial dilution evaluation.

**Corrective Action:** None required.



## SAMPLE SUMMARY

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Set ID:** 1510561  
**Date Received:** 10/27/2015 1530h

**Contact:** Jim Harris

	<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Date Collected</b>	<b>Matrix</b>	<b>Analysis</b>
3440 South 700 West	1510561-002A	GK02-ST-20	10/19/2015 000h	Aqueous	Mercury, Drinking Water
Salt Lake City, UT 84119	1510561-002A	GK02-ST-20	10/19/2015 000h	Aqueous	ICP Metals, Total
	1510561-002A	GK02-ST-20	10/19/2015 000h	Aqueous	ICPMS Metals, Total
	1510561-003A	GK02-ST-21	10/19/2015 1200h	Aqueous	ICPMS Metals, Total
Phone: (801) 263-8686	1510561-003A	GK02-ST-21	10/19/2015 1200h	Aqueous	Mercury, Drinking Water
Toll Free: (888) 263-8686	1510561-003A	GK02-ST-21	10/19/2015 1200h	Aqueous	ICP Metals, Total
Fax: (801) 263-8687	1510561-004A	GK02-ST-22	10/20/2015 000h	Aqueous	ICPMS Metals, Total
e-mail: <a href="mailto:awal@awal-labs.com">awal@awal-labs.com</a>	1510561-004A	GK02-ST-22	10/20/2015 000h	Aqueous	Mercury, Drinking Water
	1510561-004A	GK02-ST-22	10/20/2015 000h	Aqueous	ICP Metals, Total
web: <a href="http://www.awal-labs.com">www.awal-labs.com</a>	1510561-005A	GK02-ST-23	10/20/2015 1200h	Aqueous	ICP Metals, Total
	1510561-005A	GK02-ST-23	10/20/2015 1200h	Aqueous	ICPMS Metals, Total
	1510561-005A	GK02-ST-23	10/20/2015 1200h	Aqueous	Mercury, Drinking Water
Kyle F. Gross	1510561-006A	GK02-ST-24	10/21/2015 000h	Aqueous	Mercury, Drinking Water
Laboratory Director	1510561-006A	GK02-ST-24	10/21/2015 000h	Aqueous	ICP Metals, Total
	1510561-006A	GK02-ST-24	10/21/2015 000h	Aqueous	ICPMS Metals, Total
Jose Rocha	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Total Phosphate, Aqueous
QA Officer	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Hardness
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Conductivity (Specific Conductance)
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Alkalinity/ Bicarbonate/ Carbonate, A2320B
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Anions, E300.0
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	pH
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	TSS
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Total Dissolved Solids, A2540C
	1510561-018A	GK03-ST-12	10/15/2015 000h	Aqueous	Nitrite/Nitrate (as N), E353.2



## SECTION 2.

### □ ANALYTICAL REPORTS

- The contract required detection limits (CRDL's) were met.
- There is an analytical report for each sample on the chain-of-custody.
- The results and dates on the analytical reports match the raw data.
- The information on the header of the analytical reports including the field ID's, the sample dates, and the received date match the chain-of-custody.

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Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

<b>Client:</b>	Utah Division of Water Quality	<b>Contact:</b>	Jim Harris
<b>Project:</b>	Gold King Mine Spill / 01255.016.03		
<b>Lab Sample ID:</b>	1510561-002		
<b>Client Sample ID:</b>	GK02-ST-20		
<b>Collection Date:</b>	10/19/2015 000h		
<b>Received Date:</b>	10/27/2015 1530h		

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	10/29/2015 1437h	11/9/2015 1105h	E200.7	0.0237	0.100	<b>11.0</b>	<sup>2</sup> §□
Antimony	7440-36-0	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000366	0.00200	0.000876	JS <sup>1</sup>
Arsenic	7440-38-2	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000920	0.00200	<b>0.00432</b>	
Barium	7440-39-3	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000538	0.00200	<b>0.301</b>	B
Beryllium	7440-41-7	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000288	0.00200	0.000619	J
Cadmium	7440-43-9	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000193	0.000500	0.000305	JS
Calcium	7440-70-2	mg/L	10/29/2015 1437h	11/9/2015 1001h	E200.7	0.401	10.0	<b>121</b>	§
Chromium	7440-47-3	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.00154	0.00200	<b>0.00620</b>	
Cobalt	7440-48-4	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000434	0.00400	<b>0.00506</b>	
Copper	7440-50-8	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000692	0.00200	<b>0.0140</b>	
Iron	7439-89-6	mg/L	10/29/2015 1437h	11/9/2015 1105h	E200.7	0.0767	0.100	<b>10.0</b>	<sup>2</sup> §□
Lead	7439-92-1	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000264	0.00200	<b>0.00993</b>	
Magnesium	7439-95-4	mg/L	10/29/2015 1437h	11/9/2015 1105h	E200.7	0.0294	1.00	<b>27.3</b>	§□
Manganese	7439-96-5	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.00153	0.00200	<b>0.437</b>	
Mercury	7439-97-6	mg/L	11/3/2015 1615h	11/4/2015 954h	E245.1	0.0000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000206	0.00200	0.00139	JS
Nickel	7440-02-0	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000754	0.00200	<b>0.00888</b>	
Potassium	7440-09-7	mg/L	10/29/2015 1437h	11/9/2015 1105h	E200.7	0.247	1.00	<b>5.69</b>	§□
Selenium	7782-49-2	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000634	0.00200	0.000599	JS
Silver	7440-22-4	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000244	0.00200	0.0000941	JS
Sodium	7440-23-5	mg/L	10/29/2015 1437h	11/9/2015 1001h	E200.7	0.330	10.0	<b>44.5</b>	
Thallium	7440-28-0	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.0000242	0.00200	0.000166	JS
Vanadium	7440-62-2	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.000438	0.00440	<b>0.0173</b>	BS
Zinc	7440-66-6	mg/L	10/29/2015 1437h	11/4/2015 1647h	E200.8	0.00476	0.00500	<b>0.0405</b>	

⊠ - Serial dilution RPD indicates matrix interference.

§ - Post digestion spike (PDS) recovery indicates matrix interference.

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

B - This analyte was also detected in the method blank below the PQL.

J - Estimated value between the MDL and the reporting limit (PQL).

U - This flag indicates the compound was analyzed for but not detected above the MDL.



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality **Contact:** Jim Harris  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Sample ID:** 1510561-003  
**Client Sample ID:** GK02-ST-21  
**Collection Date:** 10/19/2015 1200h  
**Received Date:** 10/27/2015 1530h

### Analytical Results

TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	10/29/2015 1437h	11/9/2015 1116h	E200.7	0.0237	0.100	<b>16.5</b>	
Antimony	7440-36-0	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000366	0.00200	0.000304	J
Arsenic	7440-38-2	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000920	0.00200	<b>0.00658</b>	
Barium	7440-39-3	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000538	0.00200	<b>0.425</b>	B
Beryllium	7440-41-7	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000288	0.00200	0.00106	J
Cadmium	7440-43-9	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000193	0.000500	0.000417	J
Calcium	7440-70-2	mg/L	10/29/2015 1437h	11/9/2015 1012h	E200.7	0.401	10.0	<b>143</b>	
Chromium	7440-47-3	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.00154	0.00200	<b>0.00839</b>	
Cobalt	7440-48-4	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000434	0.00400	<b>0.00750</b>	
Copper	7440-50-8	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000692	0.00200	<b>0.0179</b>	
Iron	7439-89-6	mg/L	10/29/2015 1437h	11/9/2015 1116h	E200.7	0.0767	0.100	<b>13.0</b>	
Lead	7439-92-1	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000264	0.00200	<b>0.0148</b>	
Magnesium	7439-95-4	mg/L	10/29/2015 1437h	11/9/2015 1116h	E200.7	0.0294	1.00	<b>31.1</b>	
Manganese	7439-96-5	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.00153	0.00200	<b>0.644</b>	
Mercury	7439-97-6	mg/L	11/3/2015 1615h	11/4/2015 959h	E245.1	0.0000892	0.000150	0.0000233	J
Molybdenum	7439-98-7	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000206	0.00200	0.00110	J
Nickel	7440-02-0	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000754	0.00200	<b>0.0131</b>	
Potassium	7440-09-7	mg/L	10/29/2015 1437h	11/9/2015 1116h	E200.7	0.247	1.00	<b>6.81</b>	
Selenium	7782-49-2	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000634	0.00200	0.000810	J
Silver	7440-22-4	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000244	0.00200	0.000130	J
Sodium	7440-23-5	mg/L	10/29/2015 1437h	11/9/2015 1012h	E200.7	0.330	10.0	<b>45.8</b>	
Thallium	7440-28-0	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.0000242	0.00200	0.000276	J
Vanadium	7440-62-2	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.000438	0.00440	<b>0.0224</b>	B
Zinc	7440-66-6	mg/L	10/29/2015 1437h	11/4/2015 1702h	E200.8	0.00476	0.00500	<b>0.0523</b>	

*B - This analyte was also detected in the method blank below the PQL.*

*J - Estimated value between the MDL and the reporting limit (PQL).*





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Kyle F. Gross  
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Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Sample ID:** 1510561-004  
**Client Sample ID:** GK02-ST-22  
**Collection Date:** 10/20/2015 000h  
**Received Date:** 10/27/2015 1530h

**Contact:** Jim Harris

Analytical Results									TOTAL METALS
Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	10/29/2015 1437h	11/9/2015 1014h	E200.7	0.237	1.00	<b>85.7</b>	
Antimony	7440-36-0	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000366	0.00200	0.000219	J
Arsenic	7440-38-2	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000920	0.00200	<b>0.0259</b>	
Barium	7440-39-3	mg/L	10/29/2015 1437h	11/5/2015 1140h	E200.8	0.00269	0.0100	<b>1.88</b>	B
Beryllium	7440-41-7	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000288	0.00200	<b>0.00584</b>	
Cadmium	7440-43-9	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000193	0.000500	<b>0.00213</b>	
Calcium	7440-70-2	mg/L	10/29/2015 1437h	11/9/2015 1014h	E200.7	0.401	10.0	<b>368</b>	
Chromium	7440-47-3	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.00154	0.00200	<b>0.0350</b>	
Cobalt	7440-48-4	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000434	0.00400	<b>0.0359</b>	
Copper	7440-50-8	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000692	0.00200	<b>0.0750</b>	
Iron	7439-89-6	mg/L	10/29/2015 1437h	11/9/2015 1014h	E200.7	0.767	1.00	<b>55.1</b>	
Lead	7439-92-1	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000264	0.00200	<b>0.0901</b>	
Magnesium	7439-95-4	mg/L	10/29/2015 1437h	11/9/2015 1014h	E200.7	0.294	10.0	<b>69.6</b>	
Manganese	7439-96-5	mg/L	10/29/2015 1437h	11/5/2015 1140h	E200.8	0.00764	0.0100	<b>3.09</b>	
Mercury	7439-97-6	mg/L	11/3/2015 1615h	11/4/2015 1001h	E245.1	0.0000892	0.000150	<b>0.000187</b>	
Molybdenum	7439-98-7	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000206	0.00200	0.000439	J
Nickel	7440-02-0	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000754	0.00200	<b>0.0565</b>	
Potassium	7440-09-7	mg/L	10/29/2015 1437h	11/9/2015 1118h	E200.7	0.247	1.00	<b>20.7</b>	
Selenium	7782-49-2	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000634	0.00200	0.00120	J
Silver	7440-22-4	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000244	0.00200	0.000454	J
Sodium	7440-23-5	mg/L	10/29/2015 1437h	11/9/2015 1014h	E200.7	0.330	10.0	<b>49.8</b>	
Thallium	7440-28-0	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.0000242	0.00200	0.00112	J
Vanadium	7440-62-2	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.000438	0.00440	<b>0.0723</b>	B
Zinc	7440-66-6	mg/L	10/29/2015 1437h	11/4/2015 1705h	E200.8	0.00476	0.00500	<b>0.216</b>	

B - This analyte was also detected in the method blank below the PQL.

J - Estimated value between the MDL and the reporting limit (PQL).



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality **Contact:** Jim Harris  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Sample ID:** 1510561-005  
**Client Sample ID:** GK02-ST-23  
**Collection Date:** 10/20/2015 1200h  
**Received Date:** 10/27/2015 1530h

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	10/29/2015 1437h	11/9/2015 1016h	E200.7	0.237	1.00	<b>71.8</b>	
Antimony	7440-36-0	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000366	0.00200	0.000193	J
Arsenic	7440-38-2	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000920	0.00200	<b>0.0223</b>	
Barium	7440-39-3	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000538	0.00200	<b>1.55</b>	B
Beryllium	7440-41-7	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000288	0.00200	<b>0.00580</b>	
Cadmium	7440-43-9	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000193	0.000500	<b>0.00192</b>	
Calcium	7440-70-2	mg/L	10/29/2015 1437h	11/9/2015 1016h	E200.7	0.401	10.0	<b>302</b>	
Chromium	7440-47-3	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.00154	0.00200	<b>0.0274</b>	
Cobalt	7440-48-4	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000434	0.00400	<b>0.0327</b>	
Copper	7440-50-8	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000692	0.00200	<b>0.0746</b>	
Iron	7439-89-6	mg/L	10/29/2015 1437h	11/9/2015 1016h	E200.7	0.767	1.00	<b>53.9</b>	
Lead	7439-92-1	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000264	0.00200	<b>0.0868</b>	
Magnesium	7439-95-4	mg/L	10/29/2015 1437h	11/9/2015 1016h	E200.7	0.294	10.0	<b>59.2</b>	
Manganese	7439-96-5	mg/L	10/29/2015 1437h	11/5/2015 1143h	E200.8	0.00764	0.0100	<b>2.53</b>	
Mercury	7439-97-6	mg/L	11/3/2015 1615h	11/4/2015 1006h	E245.1	0.0000892	0.000150	<b>0.000205</b>	
Molybdenum	7439-98-7	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000206	0.00200	0.000528	J
Nickel	7440-02-0	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000754	0.00200	<b>0.0499</b>	
Potassium	7440-09-7	mg/L	10/29/2015 1437h	11/9/2015 1120h	E200.7	0.247	1.00	<b>18.1</b>	
Selenium	7782-49-2	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000634	0.00200	0.00173	J
Silver	7440-22-4	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000244	0.00200	0.000532	J
Sodium	7440-23-5	mg/L	10/29/2015 1437h	11/9/2015 1016h	E200.7	0.330	10.0	<b>62.5</b>	
Thallium	7440-28-0	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.0000242	0.00200	0.00103	J
Vanadium	7440-62-2	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.000438	0.00440	<b>0.0613</b>	B
Zinc	7440-66-6	mg/L	10/29/2015 1437h	11/4/2015 1709h	E200.8	0.00476	0.00500	<b>0.221</b>	

B - This analyte was also detected in the method blank below the PQL.

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality **Contact:** Jim Harris  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Sample ID:** 1510561-006  
**Client Sample ID:** GK02-ST-24  
**Collection Date:** 10/21/2015 000h  
**Received Date:** 10/27/2015 1530h

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	10/29/2015 1437h	11/9/2015 1026h	E200.7	0.237	1.00	<b>67.2</b>	
Antimony	7440-36-0	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000366	0.00200	0.000178	J
Arsenic	7440-38-2	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000920	0.00200	<b>0.0212</b>	
Barium	7440-39-3	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000538	0.00200	<b>1.32</b>	B
Beryllium	7440-41-7	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000288	0.00200	<b>0.00468</b>	
Cadmium	7440-43-9	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000193	0.000500	<b>0.00201</b>	
Calcium	7440-70-2	mg/L	10/29/2015 1437h	11/9/2015 1026h	E200.7	0.401	10.0	<b>294</b>	
Chromium	7440-47-3	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.00154	0.00200	<b>0.0324</b>	
Cobalt	7440-48-4	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000434	0.00400	<b>0.0304</b>	
Copper	7440-50-8	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000692	0.00200	<b>0.0724</b>	
Iron	7439-89-6	mg/L	10/29/2015 1437h	11/9/2015 1026h	E200.7	0.767	1.00	<b>56.8</b>	
Lead	7439-92-1	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000264	0.00200	<b>0.0763</b>	
Magnesium	7439-95-4	mg/L	10/29/2015 1437h	11/9/2015 1026h	E200.7	0.294	10.0	<b>57.2</b>	
Manganese	7439-96-5	mg/L	10/29/2015 1437h	11/5/2015 1146h	E200.8	0.00764	0.0100	<b>2.04</b>	
Mercury	7439-97-6	mg/L	11/3/2015 1615h	11/4/2015 1008h	E245.1	0.0000892	0.000150	<b>0.000193</b>	
Molybdenum	7439-98-7	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000206	0.00200	0.00103	J
Nickel	7440-02-0	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000754	0.00200	<b>0.0585</b>	
Potassium	7440-09-7	mg/L	10/29/2015 1437h	11/9/2015 1122h	E200.7	0.247	1.00	<b>18.5</b>	
Selenium	7782-49-2	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000634	0.00200	<b>0.00204</b>	
Silver	7440-22-4	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000244	0.00200	0.000490	J
Sodium	7440-23-5	mg/L	10/29/2015 1437h	11/9/2015 1026h	E200.7	0.330	10.0	<b>61.1</b>	
Thallium	7440-28-0	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.0000242	0.00200	0.00117	J
Vanadium	7440-62-2	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.000438	0.00440	<b>0.0682</b>	B
Zinc	7440-66-6	mg/L	10/29/2015 1437h	11/4/2015 1721h	E200.8	0.00476	0.00500	<b>0.234</b>	

B - This analyte was also detected in the method blank below the PQL.

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## **INORGANIC ANALYTICAL REPORT**

**Client:** Utah Division of Water Quality **Contact:** Jim Harris  
**Project:** Gold King Mine Spill / 01255.016.03  
**Lab Sample ID:** 1510561-018  
**Client Sample ID:** GK03-ST-12  
**Collection Date:** 10/15/2015 000h  
**Received Date:** 10/27/2015 1520h

### Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		10/29/2015 824h	SM2320B	1.86	10.0	<b>94.6</b>	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		10/29/2015 824h	SM2320B	1.86	10.0	<b>94.6</b>	
Carbonate (as CaCO <sub>3</sub> )		mg/L		10/29/2015 824h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		10/29/2015 2252h	E300.0	0.0751	1.00	<b>15.8</b>	
Conductivity		µmhos/cm		10/29/2015 750h	SM2510B	0.436	2.00	<b>898</b>	
Hardness (as CaCO <sub>3</sub> )		mg/L		11/6/2015 1333h	SM2340B	10.0	10.0	<b>403</b>	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		11/6/2015 2100h	E353.2	0.833	1.00	<b>30.7</b>	
pH @ 25° C		pH Units		10/28/2015 1814h	SM4500-H+B	1.00	1.00	<b>7.04</b>	H
Phosphate, Total (as P)	7723-14-0	mg/L	11/2/2015 1400h	11/2/2015 1705h	SM4500-P-F	0.0212	0.0500	<b>0.670</b>	'
Sulfate	14808-79-8	mg/L		10/29/2015 2054h	E300.0	2.11	75.0	<b>207</b>	
Total Dissolved Solids		mg/L		10/29/2015 1110h	SM2540C	61.3	100	<b>700</b>	H@
Total Suspended Solids	TSS	mg/L		10/29/2015 1430h	SM2540D	14.2	15.0	<b>1,020</b>	H@

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

' - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

H - Sample was received outside of the holding time.

U - This flag indicates the compound was analyzed for but not detected above the MDL.



## SECTION 3.

### ❑ BATCH QC REPORTS

#### ❑ METHOD BLANK (MB) REPORTS

- ❑ Raw data matches method blank reports.
- ❑ Any results greater than the contract required detection limit are flagged.

#### ❑ LABORATORY CONTROL SAMPLE (LCS) REPORTS

- ❑ Raw data matches LCS reports.
- ❑ Any results outside the control limits are flagged.

#### ❑ MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD) REPORTS

- ❑ Raw data matches MS/MSD reports.
- ❑ Any results outside the control limits are flagged and qualified.

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Kyle F. Gross

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Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** ME

**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: LCS-40003</b>													
Date Analyzed:		11/09/2015 959h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Aluminum	1.06	mg/L	E200.7	0.0237	0.100	1.000	0	106	85 - 115				
Calcium	10.5	mg/L	E200.7	0.0401	1.00	10.00	0	105	85 - 115				
Iron	1.03	mg/L	E200.7	0.0767	0.100	1.000	0	103	85 - 115				
Magnesium	10.6	mg/L	E200.7	0.0294	1.00	10.00	0	106	85 - 115				
Potassium	10.3	mg/L	E200.7	0.247	1.00	10.00	0	103	85 - 115				
Sodium	10.1	mg/L	E200.7	0.0330	1.00	10.00	0	101	85 - 115				
<b>Lab Sample ID: LCS-40004</b>													
Date Analyzed:		11/04/2015 1644h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Antimony	0.182	mg/L	E200.8	0.0000366	0.00200	0.2000	0	91.1	85 - 115				
Arsenic	0.197	mg/L	E200.8	0.0000920	0.00200	0.2000	0	98.5	85 - 115				
Barium	0.198	mg/L	E200.8	0.000538	0.00200	0.2000	0	99.0	85 - 115				
Beryllium	0.207	mg/L	E200.8	0.0000288	0.00200	0.2000	0	103	85 - 115				
Cadmium	0.200	mg/L	E200.8	0.000193	0.000500	0.2000	0	99.8	85 - 115				
Chromium	0.199	mg/L	E200.8	0.00154	0.00200	0.2000	0	99.4	85 - 115				
Cobalt	0.197	mg/L	E200.8	0.0000434	0.00400	0.2000	0	98.6	85 - 115				
Copper	0.201	mg/L	E200.8	0.000692	0.00200	0.2000	0	101	85 - 115				
Lead	0.199	mg/L	E200.8	0.000264	0.00200	0.2000	0	99.3	85 - 115				
Manganese	0.201	mg/L	E200.8	0.00153	0.00200	0.2000	0	101	85 - 115				
Molybdenum	0.200	mg/L	E200.8	0.000206	0.00200	0.2000	0	100	85 - 115				
Nickel	0.198	mg/L	E200.8	0.000754	0.00200	0.2000	0	98.9	85 - 115				
Selenium	0.194	mg/L	E200.8	0.0000634	0.00200	0.2000	0	97.1	85 - 115				
Silver	0.181	mg/L	E200.8	0.0000244	0.00200	0.2000	0	90.7	85 - 115				
Thallium	0.194	mg/L	E200.8	0.0000242	0.00200	0.2000	0	97.2	85 - 115				
Vanadium	0.202	mg/L	E200.8	0.000438	0.00440	0.2000	0	101	85 - 115				
Zinc	0.987	mg/L	E200.8	0.00476	0.00500	1.000	0	98.7	85 - 115				

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** ME  
**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> LCS-40062	Date Analyzed:	11/04/2015	948h										
Test Code: HG-DW-245.1	Date Prepared:	11/03/2015	1615h										
Mercury	0.00336	mg/L	E245.1	0.00000892	0.000150	0.003330	0	101	85 - 115				

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Jose Rocha  
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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** ME  
**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: MB-40003</b>													
Date Analyzed: 11/09/2015 956h													
Test Code: 200.7-W													
Date Prepared: 10/29/2015 1437h													
Aluminum	< 0.100	mg/L	E200.7	0.0237	0.100								U
Calcium	< 1.00	mg/L	E200.7	0.0401	1.00								U
Iron	< 0.100	mg/L	E200.7	0.0767	0.100								U
Magnesium	< 1.00	mg/L	E200.7	0.0294	1.00								U
Potassium	< 1.00	mg/L	E200.7	0.247	1.00								U
Sodium	< 1.00	mg/L	E200.7	0.0330	1.00								U
<b>Lab Sample ID: MB-40004</b>													
Date Analyzed: 11/04/2015 1640h													
Test Code: 200.8-W													
Date Prepared: 10/29/2015 1437h													
Antimony	< 0.00200	mg/L	E200.8	0.0000366	0.00200								U
Arsenic	< 0.00200	mg/L	E200.8	0.0000920	0.00200								U
Barium	0.00171	mg/L	E200.8	0.000538	0.00200								JB
Beryllium	< 0.00200	mg/L	E200.8	0.0000288	0.00200								U
Cadmium	< 0.000500	mg/L	E200.8	0.000193	0.000500								U
Chromium	< 0.00200	mg/L	E200.8	0.00154	0.00200								U
Cobalt	< 0.00400	mg/L	E200.8	0.0000434	0.00400								U
Copper	< 0.00200	mg/L	E200.8	0.000692	0.00200								U
Lead	< 0.00200	mg/L	E200.8	0.000264	0.00200								U
Manganese	< 0.00200	mg/L	E200.8	0.00153	0.00200								U
Molybdenum	< 0.00200	mg/L	E200.8	0.000206	0.00200								U
Nickel	< 0.00200	mg/L	E200.8	0.000754	0.00200								U
Selenium	< 0.00200	mg/L	E200.8	0.0000634	0.00200								U
Silver	< 0.00200	mg/L	E200.8	0.0000244	0.00200								U
Thallium	< 0.00200	mg/L	E200.8	0.0000242	0.00200								U
Vanadium	0.000464	mg/L	E200.8	0.000438	0.00440								JB
Zinc	< 0.00500	mg/L	E200.8	0.00476	0.00500								U

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** ME  
**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> MB-40062	Date Analyzed:	11/04/2015	947h										
Test Code: HG-DW-245.1	Date Prepared:	11/03/2015	1615h										
Mercury	< 0.000150	mg/L	E245.1	0.00000892	0.000150								U

*B - This analyte was also detected in the method blank below the PQL.*

*J - Estimated value between the MDL and the reporting limit (PQL).*

*U - This flag indicates the compound was analyzed for but not detected above the MDL.*

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Kyle F. Gross  
 Laboratory Director

Jose Rocha  
 QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** ME  
**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-002AMS</b>													
Date Analyzed:		11/09/2015 1008h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Calcium	133	mg/L	E200.7	0.401	10.0	10.00	121	115	70 - 130				
Sodium	54.9	mg/L	E200.7	0.330	10.0	10.00	44.5	104	70 - 130				
<b>Lab Sample ID: 1510562-001AMS</b>													
Date Analyzed:		11/09/2015 1034h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Calcium	127	mg/L	E200.7	0.401	10.0	10.00	119	77.5	70 - 130				
Sodium	54.5	mg/L	E200.7	0.330	10.0	10.00	44.5	100	70 - 130				
<b>Lab Sample ID: 1510561-002AMS</b>													
Date Analyzed:		11/09/2015 1112h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Aluminum	16.7	mg/L	E200.7	0.0237	0.100	1.000	11	577	70 - 130				2
Iron	11.9	mg/L	E200.7	0.0767	0.100	1.000	10	184	70 - 130				2
Magnesium	39.1	mg/L	E200.7	0.0294	1.00	10.00	27.3	118	70 - 130				
Potassium	16.8	mg/L	E200.7	0.247	1.00	10.00	5.69	111	70 - 130				
<b>Lab Sample ID: 1510562-001AMS</b>													
Date Analyzed:		11/09/2015 1140h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Aluminum	17.5	mg/L	E200.7	0.0237	0.100	1.000	14.8	262	70 - 130				2
Iron	12.4	mg/L	E200.7	0.0767	0.100	1.000	14.7	-234	70 - 130				2
Magnesium	36.1	mg/L	E200.7	0.0294	1.00	10.00	27.4	86.7	70 - 130				
Potassium	15.7	mg/L	E200.7	0.247	1.00	10.00	5.89	97.8	70 - 130				
<b>Lab Sample ID: 1510561-002AMS</b>													
Date Analyzed:		11/04/2015 1656h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Antimony	0.115	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000876	57.3	75 - 125				1
Arsenic	0.204	mg/L	E200.8	0.0000920	0.00200	0.2000	0.00432	99.7	75 - 125				
Barium	0.472	mg/L	E200.8	0.000538	0.00200	0.2000	0.301	85.7	75 - 125				
Beryllium	0.201	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000619	100	75 - 125				
Cadmium	0.202	mg/L	E200.8	0.000193	0.000500	0.2000	0.000305	101	75 - 125				

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** ME

**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-002AMS</b>													
Date Analyzed:		11/04/2015 1656h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Chromium	0.204	mg/L	E200.8	0.00154	0.00200	0.2000	0.0062	99.1	75 - 125				
Cobalt	0.198	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00506	96.6	75 - 125				
Copper	0.208	mg/L	E200.8	0.000692	0.00200	0.2000	0.014	96.9	75 - 125				
Lead	0.209	mg/L	E200.8	0.000264	0.00200	0.2000	0.00993	99.5	75 - 125				
Manganese	0.613	mg/L	E200.8	0.00153	0.00200	0.2000	0.437	88.4	75 - 125				
Molybdenum	0.192	mg/L	E200.8	0.000206	0.00200	0.2000	0.00139	95.2	75 - 125				
Nickel	0.200	mg/L	E200.8	0.000754	0.00200	0.2000	0.00888	95.8	75 - 125				
Selenium	0.192	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000599	95.7	75 - 125				
Silver	0.194	mg/L	E200.8	0.0000244	0.00200	0.2000	0.0000941	97.0	75 - 125				
Thallium	0.195	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000166	97.3	75 - 125				
Vanadium	0.218	mg/L	E200.8	0.000438	0.00440	0.2000	0.0173	100	75 - 125				
Zinc	1.02	mg/L	E200.8	0.00476	0.00500	1.000	0.0405	97.9	75 - 125				
<b>Lab Sample ID: 1510562-001AMS</b>													
Date Analyzed:		11/04/2015 1734h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Antimony	0.0833	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000197	41.6	75 - 125				1
Arsenic	0.199	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0051	97.1	75 - 125				
Barium	0.424	mg/L	E200.8	0.000538	0.00200	0.2000	0.313	55.2	75 - 125				1
Beryllium	0.193	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000928	96.2	75 - 125				
Cadmium	0.199	mg/L	E200.8	0.000193	0.000500	0.2000	0.000313	99.2	75 - 125				
Chromium	0.201	mg/L	E200.8	0.00154	0.00200	0.2000	0.00802	96.4	75 - 125				
Cobalt	0.195	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00726	93.8	75 - 125				
Copper	0.206	mg/L	E200.8	0.000692	0.00200	0.2000	0.0194	93.3	75 - 125				
Lead	0.206	mg/L	E200.8	0.000264	0.00200	0.2000	0.0155	95.2	75 - 125				
Manganese	0.474	mg/L	E200.8	0.00153	0.00200	0.2000	0.417	28.9	75 - 125				1
Molybdenum	0.184	mg/L	E200.8	0.000206	0.00200	0.2000	0.000996	91.5	75 - 125				
Nickel	0.200	mg/L	E200.8	0.000754	0.00200	0.2000	0.0122	93.9	75 - 125				
Selenium	0.187	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000685	93.2	75 - 125				

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** ME  
**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1510562-001AMS	Date Analyzed:	11/04/2015	1734h										
Test Code:	200.8-W	Date Prepared:	10/29/2015	1437h									
Silver	0.186	mg/L	E200.8	0.0000244	0.00200	0.2000	0.0000787	92.9	75 - 125				
Thallium	0.191	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000191	95.5	75 - 125				
Vanadium	0.215	mg/L	E200.8	0.000438	0.00440	0.2000	0.0215	96.6	75 - 125				
Zinc	1.01	mg/L	E200.8	0.00476	0.00500	1.000	0.0581	95.2	75 - 125				
<b>Lab Sample ID:</b> 1510562-001AMS	Date Analyzed:	11/04/2015	1012h										
Test Code:	HG-DW-245.1	Date Prepared:	11/03/2015	1615h									
Mercury	0.00346	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000025	103	80 - 120				
<b>Lab Sample ID:</b> 1510561-002AMS	Date Analyzed:	11/04/2015	956h										
Test Code:	HG-DW-245.1	Date Prepared:	11/03/2015	1615h									
Mercury	0.00331	mg/L	E245.1	0.00000892	0.000150	0.003330	0	99.4	80 - 120				

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.



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Kyle F. Gross

Laboratory Director

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-002AMSD</b>													
Date Analyzed:		11/09/2015 1010h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Calcium	132	mg/L	E200.7	0.401	10.0	10.00	121	110	70 - 130	133	0.380	20	
Sodium	55.2	mg/L	E200.7	0.330	10.0	10.00	44.5	107	70 - 130	54.9	0.571	20	
<b>Lab Sample ID: 1510562-001AMSD</b>													
Date Analyzed:		11/09/2015 1037h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Calcium	126	mg/L	E200.7	0.401	10.0	10.00	119	70.0	70 - 130	127	0.591	20	
Sodium	53.7	mg/L	E200.7	0.330	10.0	10.00	44.5	92.0	70 - 130	54.5	1.53	20	
<b>Lab Sample ID: 1510561-002AMSD</b>													
Date Analyzed:		11/09/2015 1114h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Aluminum	14.9	mg/L	E200.7	0.0237	0.100	1.000	11	391	70 - 130	16.7	11.8	20	<sup>2</sup>
Iron	10.7	mg/L	E200.7	0.0767	0.100	1.000	10	64.3	70 - 130	11.9	10.6	20	<sup>2</sup>
Magnesium	38.8	mg/L	E200.7	0.0294	1.00	10.00	27.3	115	70 - 130	39.1	0.712	20	
Potassium	16.4	mg/L	E200.7	0.247	1.00	10.00	5.69	107	70 - 130	16.8	2.44	20	
<b>Lab Sample ID: 1510562-001AMSD</b>													
Date Analyzed:		11/09/2015 1142h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1437h											
Aluminum	17.5	mg/L	E200.7	0.0237	0.100	1.000	14.8	269	70 - 130	17.5	0.391	20	<sup>2</sup>
Iron	12.5	mg/L	E200.7	0.0767	0.100	1.000	14.7	-222	70 - 130	12.4	0.982	20	<sup>2</sup>
Magnesium	36.4	mg/L	E200.7	0.0294	1.00	10.00	27.4	90.2	70 - 130	36.1	0.973	20	
Potassium	15.6	mg/L	E200.7	0.247	1.00	10.00	5.89	96.6	70 - 130	15.7	0.755	20	
<b>Lab Sample ID: 1510561-002AMSD</b>													
Date Analyzed:		11/04/2015 1659h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Antimony	0.112	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000876	55.4	75 - 125	0.115	3.40	20	<sup>1</sup>
Arsenic	0.206	mg/L	E200.8	0.0000920	0.00200	0.2000	0.00432	101	75 - 125	0.204	1.19	20	
Barium	0.477	mg/L	E200.8	0.000538	0.00200	0.2000	0.301	88.2	75 - 125	0.472	1.05	20	
Beryllium	0.204	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000619	102	75 - 125	0.201	1.24	20	
Cadmium	0.205	mg/L	E200.8	0.000193	0.000500	0.2000	0.000305	102	75 - 125	0.202	1.49	20	

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-002AMSD</b>													
Date Analyzed:		11/04/2015 1659h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Chromium	0.209	mg/L	E200.8	0.00154	0.00200	0.2000	0.0062	101	75 - 125	0.204	2.10	20	
Cobalt	0.205	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00506	99.8	75 - 125	0.198	3.22	20	
Copper	0.213	mg/L	E200.8	0.000692	0.00200	0.2000	0.014	99.3	75 - 125	0.208	2.33	20	
Lead	0.210	mg/L	E200.8	0.000264	0.00200	0.2000	0.00993	100	75 - 125	0.209	0.506	20	
Manganese	0.631	mg/L	E200.8	0.00153	0.00200	0.2000	0.437	97.4	75 - 125	0.613	2.90	20	
Molybdenum	0.194	mg/L	E200.8	0.000206	0.00200	0.2000	0.00139	96.1	75 - 125	0.192	0.994	20	
Nickel	0.210	mg/L	E200.8	0.000754	0.00200	0.2000	0.00888	100	75 - 125	0.2	4.53	20	
Selenium	0.195	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000599	97.1	75 - 125	0.192	1.50	20	
Silver	0.191	mg/L	E200.8	0.0000244	0.00200	0.2000	0.0000941	95.7	75 - 125	0.194	1.36	20	
Thallium	0.196	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000166	97.9	75 - 125	0.195	0.593	20	
Vanadium	0.223	mg/L	E200.8	0.000438	0.00440	0.2000	0.0173	103	75 - 125	0.218	2.31	20	
Zinc	1.03	mg/L	E200.8	0.00476	0.00500	1.000	0.0405	99.3	75 - 125	1.02	1.29	20	
<b>Lab Sample ID: 1510562-001AMSD</b>													
Date Analyzed:		11/04/2015 1737h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1437h											
Antimony	0.123	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000197	61.5	75 - 125	0.0833	38.6	20	<sup>1</sup> @
Arsenic	0.198	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0051	96.4	75 - 125	0.199	0.726	20	
Barium	0.615	mg/L	E200.8	0.000538	0.00200	0.2000	0.313	151	75 - 125	0.424	36.9	20	<sup>1</sup> @
Beryllium	0.274	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000928	137	75 - 125	0.193	34.5	20	<sup>1</sup> @
Cadmium	0.291	mg/L	E200.8	0.000193	0.000500	0.2000	0.000313	145	75 - 125	0.199	37.6	20	<sup>1</sup> @
Chromium	0.200	mg/L	E200.8	0.00154	0.00200	0.2000	0.00802	96.0	75 - 125	0.201	0.465	20	
Cobalt	0.196	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00726	94.5	75 - 125	0.195	0.720	20	
Copper	0.205	mg/L	E200.8	0.000692	0.00200	0.2000	0.0194	92.9	75 - 125	0.206	0.321	20	
Lead	0.298	mg/L	E200.8	0.000264	0.00200	0.2000	0.0155	141	75 - 125	0.206	36.7	20	<sup>1</sup> @
Manganese	0.473	mg/L	E200.8	0.00153	0.00200	0.2000	0.417	28.1	75 - 125	0.474	0.346	20	<sup>1</sup>
Molybdenum	0.269	mg/L	E200.8	0.000206	0.00200	0.2000	0.000996	134	75 - 125	0.184	37.5	20	<sup>1</sup> @
Nickel	0.200	mg/L	E200.8	0.000754	0.00200	0.2000	0.0122	93.7	75 - 125	0.2	0.227	20	
Selenium	0.186	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000685	92.7	75 - 125	0.187	0.620	20	

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Laboratory Director

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1510562-001AMSD	Date Analyzed: 11/04/2015 1737h												
Test Code: 200.8-W	Date Prepared: 10/29/2015 1437h												
Silver	0.278	mg/L	E200.8	0.0000244	0.00200	0.2000	0.0000787	139	75 - 125	0.186	39.6	20	'@
Thallium	0.277	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000191	138	75 - 125	0.191	36.5	20	'@
Vanadium	0.215	mg/L	E200.8	0.000438	0.00440	0.2000	0.0215	96.6	75 - 125	0.215	0.0807	20	
Zinc	1.00	mg/L	E200.8	0.00476	0.00500	1.000	0.0581	94.3	75 - 125	1.01	0.905	20	
<b>Lab Sample ID:</b> 1510562-001AMSD	Date Analyzed: 11/04/2015 1013h												
Test Code: HG-DW-245.1	Date Prepared: 11/03/2015 1615h												
Mercury	0.00346	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000025	103	80 - 120	0.00346	0.145	20	
<b>Lab Sample ID:</b> 1510561-002AMSD	Date Analyzed: 11/04/2015 957h												
Test Code: HG-DW-245.1	Date Prepared: 11/03/2015 1615h												
Mercury	0.00340	mg/L	E245.1	0.00000892	0.000150	0.003330	0	102	80 - 120	0.00331	2.54	20	

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-018ADUP</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	899	µmhos/cm	SM2510B	0.436	2.00					898	0.111	5	
<b>Lab Sample ID: 1510563-006ADUP</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	925	µmhos/cm	SM2510B	0.436	2.00					927	0.216	5	
<b>Lab Sample ID: 1510566-012ADUP</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	909	µmhos/cm	SM2510B	0.436	2.00					907	0.220	5	
<b>Lab Sample ID: 1510567-012ADUP</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	890	µmhos/cm	SM2510B	0.436	2.00					891	0.112	5	
<b>Lab Sample ID: 1510561-018ADUP</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	6.99	pH Units	SM4500-H+B	1.00	1.00					7.04	0.713	5	H
<b>Lab Sample ID: 1510563-006ADUP</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.47	pH Units	SM4500-H+B	1.00	1.00					7.5	0.401	5	H
<b>Lab Sample ID: 1510563-021ADUP</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.53	pH Units	SM4500-H+B	1.00	1.00					7.52	0.133	5	H
<b>Lab Sample ID: 1510566-012ADUP</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.40	pH Units	SM4500-H+B	1.00	1.00					7.39	0.135	5	H

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510567-012ADUP</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.49	pH Units	SM4500-H+B	1.00	1.00					7.45	0.535	5	H
<b>Lab Sample ID: 1510561-018ADUP</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	600	mg/L	SM2540C	61.3	100					700	15.4	5	H@
<b>Lab Sample ID: 1510563-021ADUP</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	980	mg/L	SM2540C	61.3	100					1000	2.02	5	H
<b>Lab Sample ID: 1510566-012ADUP</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	680	mg/L	SM2540C	61.3	100					900	27.8	5	H@
<b>Lab Sample ID: 1510567-012ADUP</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	780	mg/L	SM2540C	61.3	100					760	2.60	5	H
<b>Lab Sample ID: 1510561-018ADUP</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	918	mg/L	SM2540D	14.2	15.0					1020	10.1	5	H@
<b>Lab Sample ID: 1510563-021ADUP</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	58,100	mg/L	SM2540D	142	150					59300	2.04	5	H
<b>Lab Sample ID: 1510566-012ADUP</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	16,100	mg/L	SM2540D	47.2	50.0					14500	10.6	5	H@

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Kyle F. Gross  
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Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510567-012ADUP</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	1,840	mg/L	SM2540D	35.4	37.5					1930	4.79	5	H
<b>Lab Sample ID: 1510580-001CDUP</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	2,960	mg/L	SM2540D	70.8	75.0					2820	4.84	5	

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

H - Sample was received outside of the holding time.

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: LCS-R84575</b>													
Date Analyzed: 10/29/2015 1319h													
Test Code: 300.0-W													
Chloride	4.87	mg/L	E300.0	0.00751	0.100	5.000	0	97.4	90 - 110				
Sulfate	4.94	mg/L	E300.0	0.0211	0.750	5.000	0	98.8	90 - 110				
<b>Lab Sample ID: LCS-R84502</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	49,900	mg/L	SM2320B	1.86	10.0	50,000	0	99.7	90 - 110				
<b>Lab Sample ID: LCS-R84497</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	995	µmhos/cm	SM2510B	0.436	2.00	1,000	0	99.5	98 - 102				
<b>Lab Sample ID: LCS-R84886</b>													
Date Analyzed: 11/06/2015 2036h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	1.02	mg/L	E353.2	0.00833	0.0100	1.000	0	102	90 - 110				
<b>Lab Sample ID: LCS-R84485</b>													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	8.91	pH Units	SM4500-H+B	1.00	1.00	9.000	0	99.0	98 - 102				
<b>Lab Sample ID: LCS-40037</b>													
Date Analyzed: 11/02/2015 1646h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	0.991	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0	99.1	90 - 110				
<b>Lab Sample ID: LCS-R84570</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	186	mg/L	SM2540C	6.13	10.0	205.0	0	90.7	80 - 120				
<b>Lab Sample ID: LCS-R84566</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	95.0	mg/L	SM2540D	2.83	3.00	100.0	0	95.0	80 - 120				

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Kyle F. Gross  
 Laboratory Director

Jose Rocha  
 QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: MB-R84575</b>													
Date Analyzed: 10/29/2015 1303h													
Test Code: 300.0-W													
Chloride	< 0.100	mg/L	E300.0	0.00751	0.100								U
Sulfate	< 0.750	mg/L	E300.0	0.0211	0.750								U
<b>Lab Sample ID: MB-R84502</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Bicarbonate (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Carbonate (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
<b>Lab Sample ID: MB-R84497</b>													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	< 2.00	µmhos/cm	SM2510B	0.436	2.00								U
<b>Lab Sample ID: MB-R84886</b>													
Date Analyzed: 11/06/2015 2035h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	< 0.0100	mg/L	E353.2	0.00833	0.0100								U
<b>Lab Sample ID: MB-40037</b>													
Date Analyzed: 11/02/2015 1645h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	< 0.0500	mg/L	SM4500-P-F	0.0212	0.0500								U
<b>Lab Sample ID: MB-R84570</b>													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	< 10.0	mg/L	SM2540C	6.13	10.0								U
<b>Lab Sample ID: MB-R84566</b>													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	< 3.00	mg/L	SM2540D	2.83	3.00								U

U - This flag indicates the compound was analyzed for but not detected above the MDL.

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** WC

**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-018AMS</b>													
Date Analyzed: 10/29/2015 2111h													
Test Code: 300.0-W													
Chloride	499	mg/L	E300.0	0.751	10.0	500.0	15.8	96.7	90 - 110				
Sulfate	697	mg/L	E300.0	2.11	75.0	500.0	207	98.1	90 - 110				
<b>Lab Sample ID: 1510563-006AMS</b>													
Date Analyzed: 10/29/2015 2202h													
Test Code: 300.0-W													
Chloride	496	mg/L	E300.0	0.751	10.0	500.0	15.2	96.3	90 - 110				
Sulfate	630	mg/L	E300.0	2.11	75.0	500.0	141	97.9	90 - 110				
<b>Lab Sample ID: 1510566-012AMS</b>													
Date Analyzed: 10/30/2015 033h													
Test Code: 300.0-W													
Chloride	498	mg/L	E300.0	0.751	10.0	500.0	18.6	95.8	90 - 110				
Sulfate	689	mg/L	E300.0	2.11	75.0	500.0	202	97.5	90 - 110				
<b>Lab Sample ID: 1510567-012AMS</b>													
Date Analyzed: 10/30/2015 124h													
Test Code: 300.0-W													
Chloride	502	mg/L	E300.0	0.751	10.0	500.0	17.6	96.9	90 - 110				
Sulfate	696	mg/L	E300.0	2.11	75.0	500.0	205	98.3	90 - 110				
<b>Lab Sample ID: 1510561-018AMS</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	193	mg/L	SM2320B	1.86	10.0	100.0	94.6	98.1	80 - 120				
<b>Lab Sample ID: 1510563-006AMS</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	208	mg/L	SM2320B	1.86	10.0	100.0	110	98.0	80 - 120				
<b>Lab Sample ID: 1510566-012AMS</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	260	mg/L	SM2320B	1.86	10.0	100.0	156	105	80 - 120				

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510567-012AMS</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	189	mg/L	SM2320B	1.86	10.0	100.0	87.9	101	80 - 120				
<b>Lab Sample ID: 1510580-001CMS</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	238	mg/L	SM2320B	1.86	10.0	100.0	137	101	80 - 120				
<b>Lab Sample ID: 1510563-021AMS</b>													
Date Analyzed: 11/06/2015 2057h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	122	mg/L	E353.2	0.833	1.00	100.0	18.6	103	90 - 110				
<b>Lab Sample ID: 1510561-018AMS</b>													
Date Analyzed: 11/02/2015 1705h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.54	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.67	86.7	90 - 110				1
<b>Lab Sample ID: 1510566-012AMS</b>													
Date Analyzed: 11/02/2015 1718h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	4.32	mg/L	SM4500-P-F	0.0212	0.0500	1.000	3.8	52.3	90 - 110				1
<b>Lab Sample ID: 1510567-012AMS</b>													
Date Analyzed: 11/02/2015 1724h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.46	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.545	92.0	90 - 110				
<b>Lab Sample ID: 1510563-021AMS</b>													
Date Analyzed: 11/02/2015 1746h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	12.9	mg/L	SM4500-P-F	0.212	0.500	1.000	11.5	138	90 - 110				2

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.



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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality  
**Lab Set ID:** 1510561  
**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris  
**Dept:** WC  
**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510561-018AMSD</b> Date Analyzed: 10/29/2015 2128h													
Test Code: 300.0-W													
Chloride	495	mg/L	E300.0	0.751	10.0	500.0	15.8	95.9	90 - 110	499	0.765	20	
Sulfate	696	mg/L	E300.0	2.11	75.0	500.0	207	97.7	90 - 110	697	0.280	20	
<b>Lab Sample ID: 1510563-006AMSD</b> Date Analyzed: 10/29/2015 2219h													
Test Code: 300.0-W													
Chloride	496	mg/L	E300.0	0.751	10.0	500.0	15.2	96.2	90 - 110	496	0.00316	20	
Sulfate	629	mg/L	E300.0	2.11	75.0	500.0	141	97.6	90 - 110	630	0.265	20	
<b>Lab Sample ID: 1510566-012AMSD</b> Date Analyzed: 10/30/2015 050h													
Test Code: 300.0-W													
Chloride	497	mg/L	E300.0	0.751	10.0	500.0	18.6	95.7	90 - 110	498	0.164	20	
Sulfate	689	mg/L	E300.0	2.11	75.0	500.0	202	97.4	90 - 110	689	0.0439	20	
<b>Lab Sample ID: 1510567-012AMSD</b> Date Analyzed: 10/30/2015 141h													
Test Code: 300.0-W													
Chloride	497	mg/L	E300.0	0.751	10.0	500.0	17.6	95.8	90 - 110	502	1.08	20	
Sulfate	692	mg/L	E300.0	2.11	75.0	500.0	205	97.5	90 - 110	696	0.590	20	
<b>Lab Sample ID: 1510561-018AMSD</b> Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	196	mg/L	SM2320B	1.86	10.0	100.0	94.6	101	80 - 120	193	1.70	10	
<b>Lab Sample ID: 1510563-006AMSD</b> Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	213	mg/L	SM2320B	1.86	10.0	100.0	110	103	80 - 120	208	2.38	10	
<b>Lab Sample ID: 1510566-012AMSD</b> Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	257	mg/L	SM2320B	1.86	10.0	100.0	156	101	80 - 120	260	1.31	10	

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1510561

**Project:** Gold King Mine Spill / 01255.016.03

**Contact:** Jim Harris

**Dept:** WC

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1510567-012AMSD</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	186	mg/L	SM2320B	1.86	10.0	100.0	87.9	98.0	80 - 120	189	1.81	10	
<b>Lab Sample ID: 1510580-001CMSD</b>													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	237	mg/L	SM2320B	1.86	10.0	100.0	137	99.7	80 - 120	238	0.716	10	
<b>Lab Sample ID: 1510563-021AMSD</b>													
Date Analyzed: 11/06/2015 2058h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	121	mg/L	E353.2	0.833	1.00	100.0	18.6	103	90 - 110	122	0.493	10	
<b>Lab Sample ID: 1510561-018AMSD</b>													
Date Analyzed: 11/02/2015 1706h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.60	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.67	92.8	90 - 110	1.54	3.89	10	
<b>Lab Sample ID: 1510566-012AMSD</b>													
Date Analyzed: 11/02/2015 1719h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	3.20	mg/L	SM4500-P-F	0.0212	0.0500	1.000	3.8	-60.1	90 - 110	4.33	29.9	10	<sup>1</sup> @
<b>Lab Sample ID: 1510567-012AMSD</b>													
Date Analyzed: 11/02/2015 1724h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.52	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.545	97.3	90 - 110	1.47	3.55	10	
<b>Lab Sample ID: 1510563-021AMSD</b>													
Date Analyzed: 11/02/2015 1746h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	11.6	mg/L	SM4500-P-F	0.212	0.500	1.000	11.5	14.0	90 - 110	12.9	10.1	10	<sup>2</sup>

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

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