

3440 South 700 West Salt Lake City, UT 84119 Phone: (801) 263-8686, Toll Free: (888) 263-8686, Fax: (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

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

RE: Gold King Mine - San Juan River Sampling

Dear Lenora Sullivan:

Lab Set ID: 1508300

American West Analytical Laboratories received sample(s) on 8/14/2015 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.

This is a revision to a report originally issued 8/15/2015. Pages 1, 5, 10, and 15 have been revised. The collection time on sample 1508300-004 was corrected.

Thank You,

Approved by: \_\_\_\_

Laboratory Director or designee



Salt Lake City, UT 84119

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**Contact:** 

Lenora Sullivan

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality								
Project:	Gold King Mine - San Juan River Sampling								
Lab Sample ID:	1508300-001								
<b>Client Sample ID:</b>	San Juan R at Mexican Hat US163 Xing (4953000)								
<b>Collection Date:</b>	8/14/2015 1143h								
<b>Received Date:</b>	8/14/2015 2000h								

#### **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	8/14/2015 2142h	8/15/2015 433h	E200.7	0.237	1.00	124	
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000366	0.00200	0.00114	JB
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000920	0.00200	0.0372	
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 324h	E200.8	0.00269	0.0100	4.32	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000288	0.00200	0.0152	В
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000193	0.000500	0.00374	
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 445h	E200.7	4.01	100	720	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.00154	0.00200	0.0511	
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000434	0.00400	0.0596	
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000692	0.00200	0.0842	
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 401h	E200.7	0.0767	0.100	46.9	
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000264	0.00200	0.166	
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 433h	E200.7	0.294	10.0	105	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 324h	E200.8	0.00764	0.0100	5.63	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 752h	E245.1	0.00000892	0.000150	0.000372	
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000206	0.00200	0.000919	J
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000754	0.00200	0.111	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 401h	E200.7	0.247	1.00	30.4	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000634	0.00200	0.00241	В
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000244	0.00200	0.00111	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 433h	E200.7	0.330	10.0	78.6	
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.0000242	0.00200	0.000988	J
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.000438	0.00440	0.115	
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 244h	E200.8	0.00476	0.00500	0.270	

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

 ${\it J}$  - Estimated value between the MDL and the reporting limit (PQL).

#### Report Date: 8/15/2015 Page 2 of 33



Salt Lake City, UT 84119

**Contact:** 

Lenora Sullivan

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Laboratory Director

Kyle F. Gross

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality						
Project:	Gold King Mine - San Juan River Sampling						
Lab Sample ID:	1508300-002						
<b>Client Sample ID:</b>	San Juan R at Sand Island (4953250)						
<b>Collection Date:</b>	8/14/2015 1102h						
<b>Received Date:</b>	8/14/2015 2000h						

#### **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	8/14/2015 2142h	8/15/2015 435h	E200.7	0.237	1.00	66.3	
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000366	0.00200	0.000545	JB
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000920	0.00200	0.0168	
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000538	0.00200	1.46	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000288	0.00200	0.00748	В
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000193	0.000500	0.00140	
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 435h	E200.7	0.401	10.0	148	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.00154	0.00200	0.0298	
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000434	0.00400	0.0418	
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000692	0.00200	0.116	
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 403h	E200.7	0.0767	0.100	58.2	
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000264	0.00200	0.0960	
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 403h	E200.7	0.0294	1.00	35.6	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 327h	E200.8	0.00764	0.0100	2.16	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 753h	E245.1	0.00000892	0.000150	0.000270	
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000206	0.00200	0.000621	J
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000754	0.00200	0.0492	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 403h	E200.7	0.247	1.00	12.5	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000634	0.00200	0.00156	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000244	0.00200	0.000574	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 403h	E200.7	0.0330	1.00	55.7	
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.0000242	0.00200	0.00110	J
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.000438	0.00440	0.0774	
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 247h	E200.8	0.00476	0.00500	0.288	

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

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

#### Report Date: 8/15/2015 Page 3 of 33



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Laboratory Director

Kyle F. Gross

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Divisi	Utah Division of Water Quality							
Project:	Gold King l	Gold King Mine - San Juan River Sampling							
Lab Sample ID:	1508300-00	)3							
<b>Client Sample ID:</b>	San Juan Ri	ver at Town of Montezuma (4953990)							
<b>Collection Date:</b>	8/14/2015	955h							
<b>Received Date:</b>	8/14/2015	2000h							

#### **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	8/14/2015 2142h	8/15/2015 437h	E200.7	0.237	1.00	62.0	
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000366	0.00200	0.000443	JB
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000920	0.00200	0.0160	
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000538	0.00200	1.40	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000288	0.00200	0.00703	В
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000193	0.000500	0.00141	
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 437h	E200.7	0.401	10.0	153	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.00154	0.00200	0.0299	
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000434	0.00400	0.0398	
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000692	0.00200	0.106	
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 405h	E200.7	0.0767	0.100	54.3	
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000264	0.00200	0.0908	
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 405h	E200.7	0.0294	1.00	32.9	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 330h	E200.8	0.00764	0.0100	2.06	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 759h	E245.1	0.00000892	0.000150	0.000247	
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000206	0.00200	0.000722	J
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000754	0.00200	0.0484	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 405h	E200.7	0.247	1.00	12.7	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000634	0.00200	0.00149	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000244	0.00200	0.000495	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 405h	E200.7	0.0330	1.00	59.5	
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.0000242	0.00200	0.00104	J
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.000438	0.00440	0.0764	
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 251h	E200.8	0.00476	0.00500	0.265	

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

 ${\it J}$  - Estimated value between the MDL and the reporting limit (PQL).

#### Report Date: 8/15/2015 Page 4 of 33



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Laboratory Director

Kyle F. Gross

Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Divisi	Utah Division of Water Quality							
Project:	Gold King Mine - San Juan River Sampling								
Lab Sample ID:	1508300-00	1508300-004							
<b>Client Sample ID:</b>	San Juan R	at US160 Xing in CO (4954000)							
<b>Collection Date:</b>	8/14/2015	850h							
<b>Received Date:</b>	8/14/2015	2000h							

#### **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	8/14/2015 2142h	8/15/2015 408h	E200.7	0.0237	0.100	44.3	2
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000366	0.00200	0.000413	JB1
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000920	0.00200	0.0125	
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000538	0.00200	0.918	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000288	0.00200	0.00489	В
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000193	0.000500	0.000984	
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 439h	E200.7	0.401	10.0	114	2
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.00154	0.00200	0.0237	
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000434	0.00400	0.0271	
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000692	0.00200	0.0705	
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 408h	E200.7	0.0767	0.100	39.1	2
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000264	0.00200	0.0643	
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 408h	E200.7	0.0294	1.00	22.4	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.00153	0.00200	1.36	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 746h	E245.1	0.00000892	0.000150	0.000148	J
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000206	0.00200	0.000772	Jı
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000754	0.00200	0.0345	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 408h	E200.7	0.247	1.00	10.4	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000634	0.00200	0.00132	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000244	0.00200	0.000380	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 439h	E200.7	0.330	10.0	54.8	2
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.0000242	0.00200	0.000706	J
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.000438	0.00440	0.0600	
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 254h	E200.8	0.00476	0.00500	0.197	

<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).

Reissue of a previously generated report. The collection time has been revised. Information herein supersedes that of the previously issued reports.



W CSt

Lenora Sullivan

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Laboratory Director

Kyle F. Gross

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality							
Project:	Gold King Mine - San Juan River Sampling							
Lab Sample ID:	1508300-005							
<b>Client Sample ID:</b>	San Juan R at Clay Hills							
<b>Collection Date:</b>	8/14/2015 1433h							
<b>Received Date:</b>	8/14/2015 2000h							

#### **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	8/14/2015 2142h	8/15/2015 359h	E200.7	0.237	1.00	73.9	
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000366	0.00200	0.000377	JB
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000920	0.00200	0.0217	
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 333h	E200.8	0.00269	0.0100	2.04	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000288	0.00200	0.00721	В
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000193	0.000500	0.00222	
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 359h	E200.7	0.401	10.0	422	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.00154	0.00200	0.0338	
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000434	0.00400	0.0351	
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000692	0.00200	0.0597	
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 418h	E200.7	0.0767	0.100	34.7	
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000264	0.00200	0.0892	
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 359h	E200.7	0.294	10.0	63.4	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 333h	E200.8	0.00764	0.0100	2.90	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 801h	E245.1	0.00000892	0.000150	0.000168	
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000206	0.00200	0.00103	J
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000754	0.00200	0.0629	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 418h	E200.7	0.247	1.00	17.3	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000634	0.00200	0.00182	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000244	0.00200	0.000664	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 418h	E200.7	0.0330	1.00	59.7	
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.0000242	0.00200	0.000670	J
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.000438	0.00440	0.0845	
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 320h	E200.8	0.00476	0.00500	0.198	

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

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

#### Report Date: 8/15/2015 Page 6 of 33



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality								
Project:	Gold King Mine - San Juan River Sampling								
Lab Sample ID:	1508300-001								
<b>Client Sample ID:</b>	San Juan R at Mexican Hat US163 Xing (4953000)								
<b>Collection Date:</b>	8/14/2015 1143h								
<b>Received Date:</b>	8/14/2015 2000h								

#### **Analytical Results**

DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/14/2015 2142h	8/15/2015 515h	E200.7	0.0237	0.100	0.120	
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000366	0.00200	0.00104	J
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000920	0.00200	0.00233	В
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000538	0.00200	0.157	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000288	0.00200	0.0000429	J
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 515h	E200.7	0.0401	1.00	46.2	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000434	0.00400	0.000236	J
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000692	0.00200	0.00586	В
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 515h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 515h	E200.7	0.0294	1.00	10.5	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.00153	0.00200	0.00243	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 821h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000206	0.00200	0.00587	В
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000754	0.00200	0.00175	J
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 515h	E200.7	0.247	1.00	4.29	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000634	0.00200	0.00156	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000244	0.00200	0.000152	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 500h	E200.7	0.330	10.0	68.0	B <sup>2</sup>
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.0000242	0.00200	0.000182	JB
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.000438	0.00440	0.00806	В
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 159h	E200.8	0.00476	0.00500	< 0.00500	U

 $^{2}$  - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

Analysis performed on a portion of the sample filtered at the laboratory upon receipt.

*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							
Project:	Gold King Mine - San Juan River Sampling							
Lab Sample ID:	1508300-002							
<b>Client Sample ID:</b>	San Juan R at Sand Island (4953250)							
<b>Collection Date:</b>	8/14/2015 1102h							
<b>Received Date:</b>	8/14/2015 2000h							

#### **Analytical Results**

DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.0237	0.100	< 0.100	U
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000366	0.00200	0.00103	J
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000920	0.00200	0.00203	В
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000538	0.00200	0.0786	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000288	0.00200	0.0000535	J
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.0401	1.00	53.2	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000434	0.00400	0.000131	J
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000692	0.00200	0.00331	В
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.0294	1.00	8.26	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.00153	0.00200	0.00702	
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 823h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000206	0.00200	0.00531	В
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000754	0.00200	0.00238	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.247	1.00	3.27	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000634	0.00200	0.00108	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000244	0.00200	0.000193	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 533h	E200.7	0.0330	1.00	49.5	В
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.0000242	0.00200	0.000129	JB
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.000438	0.00440	0.00588	В
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 215h	E200.8	0.00476	0.00500	0.00487	J

Analysis performed on a portion of the sample filtered at the laboratory upon receipt.

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Divisi	Utah Division of Water Quality							
Project:	Gold King l	Gold King Mine - San Juan River Sampling							
Lab Sample ID:	1508300-00	)3							
<b>Client Sample ID:</b>	San Juan Ri	San Juan River at Town of Montezuma (4953990)							
1									
Collection Date:									
-		955h							

#### **Analytical Results**

DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.0237	0.100	0.0248	J
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000366	0.00200	0.000582	J
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000920	0.00200	0.00127	JB
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000538	0.00200	0.0851	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000288	0.00200	0.0000403	J
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.0401	1.00	55.1	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000434	0.00400	0.000146	J
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000692	0.00200	0.00379	В
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.0294	1.00	7.81	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.00153	0.00200	< 0.00200	U
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 811h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000206	0.00200	0.00284	В
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000754	0.00200	0.00176	J
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.247	1.00	3.51	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000634	0.00200	0.000989	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000244	0.00200	0.0000355	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 535h	E200.7	0.0330	1.00	53.0	В
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.0000242	0.00200	0.0000272	JB
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.000438	0.00440	0.00307	JB
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 218h	E200.8	0.00476	0.00500	< 0.00500	U

Analysis performed on a portion of the sample filtered at the laboratory upon receipt.

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality						
Project:	Gold King Mine - San Juan River Sampling						
Lab Sample ID:	1508300-004						
<b>Client Sample ID:</b>	San Juan R at US160	Xing in CO (4954000)					
<b>Collection Date:</b>	8/14/2015 850h						
<b>Received Date:</b>	8/14/2015 2000h						

#### **Analytical Results**

DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.0237	0.100	0.0648	J
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000366	0.00200	0.000421	J
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000920	0.00200	0.00170	JB
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000538	0.00200	0.0723	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000288	0.00200	0.0000382	J
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.0401	1.00	53.4	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000434	0.00400	0.000133	J
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000692	0.00200	0.00386	В
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.0294	1.00	6.61	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.00153	0.00200	0.00180	J
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 825h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000206	0.00200	0.00365	В
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000754	0.00200	0.00314	
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.247	1.00	3.66	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000634	0.00200	0.00110	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000244	0.00200	< 0.00200	U
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 537h	E200.7	0.0330	1.00	52.4	В
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.0000242	0.00200	0.0000385	JB
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.000438	0.00440	0.00411	JB
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 221h	E200.8	0.00476	0.00500	< 0.00500	U

Analysis performed on a portion of the sample filtered at the laboratory upon receipt.

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

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

Reissue of a previously generated report. The collection time has been revised. Information herein supersedes that of the previously issued reports.

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



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Laboratory Director

Kyle F. Gross

Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality							
Project:	Gold King Mine - San Juan River Sampling							
Lab Sample ID:	1508300-005							
<b>Client Sample ID:</b>	San Juan R at Clay Hills							
<b>Collection Date:</b>	8/14/2015 1433h							
<b>Received Date:</b>	8/14/2015 2000h							

#### **Analytical Results**

DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.0237	0.100	0.0385	J
Antimony	7440-36-0	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000366	0.00200	0.000316	J
Arsenic	7440-38-2	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000920	0.00200	0.00189	JB
Barium	7440-39-3	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000538	0.00200	0.121	
Beryllium	7440-41-7	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000288	0.00200	< 0.00200	U
Cadmium	7440-43-9	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.0401	1.00	51.1	
Chromium	7440-47-3	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000434	0.00400	0.000125	J
Copper	7440-50-8	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000692	0.00200	0.00360	В
Iron	7439-89-6	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.0294	1.00	8.23	
Manganese	7439-96-5	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.00153	0.00200	< 0.00200	U
Mercury	7439-97-6	mg/L	8/14/2015 2207h	8/15/2015 827h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000206	0.00200	0.00330	В
Nickel	7440-02-0	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000754	0.00200	0.00128	J
Potassium	7440-09-7	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.247	1.00	3.69	
Selenium	7782-49-2	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000634	0.00200	0.00113	JB
Silver	7440-22-4	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000244	0.00200	0.0000286	J
Sodium	7440-23-5	mg/L	8/14/2015 2142h	8/15/2015 539h	E200.7	0.0330	1.00	49.8	В
Thallium	7440-28-0	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.0000242	0.00200	< 0.00200	U
Vanadium	7440-62-2	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.000438	0.00440	0.00538	В
Zinc	7440-66-6	mg/L	8/14/2015 2142h	8/15/2015 234h	E200.8	0.00476	0.00500	< 0.00500	U

Analysis performed on a portion of the sample filtered at the laboratory upon receipt.

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

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Utah Division of Water Quality								
Gold King Mine - San Juan River Sampling								
1508300-001								
San Juan R at Mexican Hat US163 Xing (4953000)								
8/14/2015 1143h								
8/14/2015 2000h								

#### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	127	
Bicarbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	127	
Carbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/14/2015 2155h	E300.0	0.0751	1.00	12.7	
Conductivity		µmhos/cm		8/15/2015 542h	SM2510B	0.436	2.00	659	
Hardness (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	2,230	
Hardness, Dissolved (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	159	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/14/2015 2334h	E353.2	0.00833	0.0100	0.763	
pH @ 25° C		pH Units		8/14/2015 2003h	SM4500-H+B	1.00	1.00	7.93	
Phosphate, Total (as P)	7723-14-0	mg/L	8/15/2015 750h	8/15/2015 1043h	SM4500-P-F	0.106	0.250	8.98	2
Sulfate	14808-79-8	mg/L		8/14/2015 2155h	E300.0	0.211	7.50	173	
Total Dissolved Solids		mg/L		8/14/2015 2040h	SM2540C	30.6	50.0	760	
Total Suspended Solids	TSS	mg/L		8/14/2015 2020h	SM2540D	142	150	17,700	

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

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Jose Rocha QA Officer

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality						
Project:	Gold King Mine - San Juan River Sampling						
Lab Sample ID:	1508300-002						
<b>Client Sample ID:</b>	San Juan R at Sand Island (4953250)						
<b>Collection Date:</b>	8/14/2015 1102h						
<b>Received Date:</b>	8/14/2015 2000h						

#### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	113	
Bicarbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	1,110	
Carbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/14/2015 2246h	E300.0	0.0751	1.00	11.9	
Conductivity		µmhos/cm		8/15/2015 542h	SM2510B	0.436	2.00	594	
Hardness (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	517	
Hardness, Dissolved (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	167	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/14/2015 2335h	E353.2	0.00833	0.0100	0.508	
pH @ 25° C		pH Units		8/14/2015 2003h	SM4500-H+B	1.00	1.00	8.23	
Phosphate, Total (as P)	7723-14-0	mg/L	8/15/2015 750h	8/15/2015 1034h	SM4500-P-F	0.0212	0.0500	2.03	
Sulfate	14808-79-8	mg/L		8/14/2015 2246h	E300.0	0.211	7.50	146	
Total Dissolved Solids		mg/L		8/14/2015 2040h	SM2540C	30.6	50.0	630	@
Total Suspended Solids	TSS	mg/L		8/14/2015 2020h	SM2540D	142	150	6,580	

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

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#### Report Date: 8/15/2015 Page 13 of 33



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Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Divisi	on of Water Quality										
Project:	Gold King I	old King Mine - San Juan River Sampling										
Lab Sample ID:	1508300-00	0 1 0										
<b>Client Sample ID:</b>	San Juan Ri	iver at Town of Montezuma (4953990)										
Collection Data	0/14/2015	0551										
Conection Date:	8/14/2015	14/2015 955h										
Received Date:	8/14/2015 8/14/2015											

#### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	115	
Bicarbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	115	
Carbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/14/2015 2303h	E300.0	0.0751	1.00	10.1	
Conductivity		µmhos/cm		8/15/2015 542h	SM2510B	0.436	2.00	636	
Hardness (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	518	
Hardness, Dissolved (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	170	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/14/2015 2336h	E353.2	0.00833	0.0100	0.509	
pH @ 25° C		pH Units		8/14/2015 2003h	SM4500-H+B	1.00	1.00	8.33	
Phosphate, Total (as P)	7723-14-0	mg/L	8/15/2015 750h	8/15/2015 1035h	SM4500-P-F	0.0212	0.0500	1.97	
Sulfate	14808-79-8	mg/L		8/14/2015 2303h	E300.0	0.211	7.50	154	
Total Dissolved Solids		mg/L		8/14/2015 2040h	SM2540C	30.6	50.0	480	
Total Suspended Solids	TSS	mg/L		8/14/2015 2020h	SM2540D	142	150	6,180	

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Report Date: 8/15/2015 Page 14 of 33



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Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality										
Project:	old King Mine - San Juan River Sampling										
Lab Sample ID:	1508300-004										
<b>Client Sample ID:</b>	San Juan R at US160 Xing in CO (4954	000)									
<b>Collection Date:</b>	8/14/2015 850h										
<b>Received Date:</b>	8/14/2015 2000h										

#### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	110	
Bicarbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	110	
Carbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/14/2015 2320h	E300.0	0.0751	1.00	9.04	
Conductivity		µmhos/cm		8/15/2015 542h	SM2510B	0.436	2.00	634	
Hardness (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	377	
Hardness, Dissolved (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	160	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/14/2015 2338h	E353.2	0.00833	0.0100	0.718	
pH @ 25° C		pH Units		8/14/2015 2003h	SM4500-H+B	1.00	1.00	8.25	
Phosphate, Total (as P)	7723-14-0	mg/L	8/15/2015 750h	8/15/2015 1035h	SM4500-P-F	0.0212	0.0500	1.36	
Sulfate	14808-79-8	mg/L		8/14/2015 2320h	E300.0	0.211	7.50	135	
Total Dissolved Solids		mg/L		8/14/2015 2040h	SM2540C	30.6	50.0	720	
Total Suspended Solids	TSS	mg/L		8/14/2015 2020h	SM2540D	142	150	4,100	

Reissue of a previously generated report. The collection time has been revised. Information herein supersedes that of the previously issued reports.

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Jose Rocha QA Officer

Lenora Sullivan

## **INORGANIC ANALYTICAL REPORT**

Client:	Utah Division of Water Quality										
Project:	Gold King Mine - San Juan River Sampling										
Lab Sample ID:	1508300-005										
<b>Client Sample ID:</b>	San Juan R at Clay Hills										
<b>Collection Date:</b>	8/14/2015 1433h										
<b>Received Date:</b>	8/14/2015 2000h										

#### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	117	
Bicarbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	117	
Carbonate (as CaCO3)		mg/L		8/15/2015 606h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/15/2015 1059h	E300.0	0.0751	1.00	10.3	
Conductivity		µmhos/cm		8/15/2015 542h	SM2510B	0.436	2.00	615	
Hardness (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	1,310	
Hardness, Dissolved (as CaCO3)		mg/L		8/15/2015	SM2340B	10.0	10.0	161	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/14/2015 2339h	E353.2	0.00833	0.0100	0.539	
pH @ 25° C		pH Units		8/14/2015 2003h	SM4500-H+B	1.00	1.00	8.21	
Phosphate, Total (as P)	7723-14-0	mg/L	8/15/2015 750h	8/15/2015 1036h	SM4500-P-F	0.0212	0.0500	3.71	
Sulfate	14808-79-8	mg/L		8/15/2015 1059h	E300.0	0.211	7.50	144	
Total Dissolved Solids		mg/L		8/14/2015 2040h	SM2540C	30.6	50.0	570	
Total Suspended Solids	TSS	mg/L		8/14/2015 2020h	SM2540D	142	150	8,320	

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

Report Date: 8/15/2015 Page 16 of 33



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**OC SUMMARY REPORT** 

### Jose Rocha QA Officer

Lab Sample 1	ID: LCS-38583	Date Analyze	d: 08/15/20	15 458h										
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Project:	Gold King Mine - San Ju	an River Sam	pling				QC Type	e: LCS						
Lab Set ID:	: 1508300						Dept:	ME						
Client:	Utah Division of Water Q	Quality					Contact:	Lenora Su	ıllivan					
ANALYTICAL L.	ABORATORIES													

Lab Sample ID:	LCS-38583	Date Analyzed:	08/15/201	5 458h							
Test Code:	200.7-DIS	Date Prepared:	08/14/201	5 2142h							
Aluminum		0.982	mg/L	E200.7	0.0237	0.100	1.000	0	98.2	85 - 115	
Calcium		9.61	mg/L	E200.7	0.0401	1.00	10.00	0	96.1	85 - 115	
Iron		0.921	mg/L	E200.7	0.0767	0.100	1.000	0	92.1	85 - 115	
Magnesium		9.64	mg/L	E200.7	0.0294	1.00	10.00	0	96.4	85 - 115	
Potassium		9.89	mg/L	E200.7	0.247	1.00	10.00	0	98.9	85 - 115	
Sodium		9.69	mg/L	E200.7	0.0330	1.00	10.00	0	96.9	85 - 115	
Lab Sample ID:	LCS-38581	Date Analyzed:	08/15/201	5 431h							
Test Code:	200.7-W	Date Prepared:	08/14/201	5 2142h							
Aluminum		0.959	mg/L	E200.7	0.0237	0.100	1.000	0	95.9	85 - 115	
Calcium		9.57	mg/L	E200.7	0.0401	1.00	10.00	0	95.7	85 - 115	
Iron		0.926	mg/L	E200.7	0.0767	0.100	1.000	0	92.6	85 - 115	
Magnesium		9.67	mg/L	E200.7	0.0294	1.00	10.00	0	96.7	85 - 115	
Potassium		9.79	mg/L	E200.7	0.247	1.00	10.00	0	97.9	85 - 115	
Potassium		2.19	mg/L	E200.7	0.247	1.00	10.00	0	)1.)	00 110	
Sodium		9.68	mg/L mg/L	E200.7 E200.7	0.0330	1.00	10.00	0	96.8	85 - 115	
	LCS-38584		U	E200.7							
Sodium	LCS-38584 200.8-DIS	9.68	mg/L	E200.7 5 155h							
Sodium Lab Sample ID:		9.68 Date Analyzed:	mg/L 08/15/201	E200.7 5 155h							
Sodium Lab Sample ID: Test Code:		9.68 Date Analyzed: Date Prepared:	mg/L 08/15/201 08/14/201	E200.7 5 155h 5 2142h	0.0330	1.00	10.00	0	96.8	85 - 115	
Sodium Lab Sample ID: Test Code: Antimony		9.68 Date Analyzed: Date Prepared: 0.176	mg/L 08/15/201 08/14/201 mg/L	E200.7 5 155h 5 2142h E200.8	0.0330	0.00200	0.2000	0	96.8	85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic		9.68 Date Analyzed: Date Prepared: 0.176 0.200	mg/L 08/15/201 08/14/201 mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8	0.0330	1.00 0.00200 0.00200	10.00 0.2000 0.2000	0 0 0 0 0	96.8 88.2 99.8	85 - 115 85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189	mg/L 08/15/201 08/14/201 mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538	1.00 0.00200 0.00200 0.00200	10.00 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6	85 - 115 85 - 115 85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium Beryllium		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189 0.198	mg/L 08/15/201 08/14/201: mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538 0.0000288	1.00 0.00200 0.00200 0.00200 0.00200	10.00 0.2000 0.2000 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6 99.1	85 - 115 85 - 115 85 - 115 85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium Beryllium Cadmium		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189 0.198 0.192	mg/L 08/15/201 08/14/2013 mg/L mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8 E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538 0.0000288 0.000193	1.00 0.00200 0.00200 0.00200 0.00200 0.00200 0.000500	10.00 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6 99.1 95.8	85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium Beryllium Cadmium Chromium		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189 0.198 0.192 0.188	mg/L 08/15/201 08/14/201 mg/L mg/L mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538 0.0000288 0.0000193 0.00154	1.00 0.00200 0.00200 0.00200 0.00200 0.000500 0.000500	10.00 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6 99.1 95.8 94.1	85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189 0.198 0.192 0.188 0.188	mg/L 08/15/201 08/14/201: mg/L mg/L mg/L mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538 0.0000288 0.000193 0.00154 0.0000434	1.00 0.00200 0.00200 0.00200 0.00200 0.000500 0.00200 0.00200 0.00400	10.00 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6 99.1 95.8 94.1 93.8	85 - 115 85 - 115	
Sodium Lab Sample ID: Test Code: Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper		9.68 Date Analyzed: Date Prepared: 0.176 0.200 0.189 0.198 0.192 0.188 0.188 0.188 0.188 0.193	mg/L 08/15/201 08/14/201: mg/L mg/L mg/L mg/L mg/L mg/L mg/L	E200.7 5 155h 5 2142h E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8 E200.8	0.0330 0.0000366 0.0000920 0.000538 0.0000288 0.000193 0.00154 0.0000434 0.0000434	1.00 0.00200 0.00200 0.00200 0.00200 0.000500 0.00200 0.00200 0.00400 0.00200	10.00 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000 0.2000	0 0 0 0 0 0 0 0 0 0 0 0	96.8 88.2 99.8 94.6 99.1 95.8 94.1 93.8 96.4	85 - 115 85 - 115	

Report Date: 8/15/2015 Page 17 of 33



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### Jose Rocha QA Officer

#### **QC SUMMARY REPORT** Lenora Sullivan **Client:** Utah Division of Water Quality **Contact:** Lab Set ID: 1508300 Dept: ME QC Type: LCS **Project:** Gold King Mine - San Juan River Sampling Spike Ref. **RPD Ref.** Reporting Amount Analyte Result Units Method MDI Limit Sniked %REC Limits Δmt % RPD Amount

Analyte		Result	Units	Method	MDL	Limit	Spiked	Amount	%REC	Limits	Amt	% RPD	Limit	Qual
Lab Sample ID:	LCS-38584	Date Analyzed:	08/15/20	15 155h										
Test Code:	200.8-DIS	Date Prepared:	08/14/20	15 2142h										
Nickel		0.190	mg/L	E200.8	0.000754	0.00200	0.2000	0	95.0	85 - 115				
Selenium		0.201	mg/L	E200.8	0.0000634	0.00200	0.2000	0	101	85 - 115				
Silver		0.189	mg/L	E200.8	0.0000244	0.00200	0.2000	0	94.6	85 - 115				
Thallium		0.187	mg/L	E200.8	0.0000242	0.00200	0.2000	0	93.3	85 - 115				
Vanadium		0.192	mg/L	E200.8	0.000438	0.00440	0.2000	0	95.9	85 - 115				
Zinc		0.997	mg/L	E200.8	0.00476	0.00500	1.000	0	99.7	85 - 115				
Lab Sample ID:	LCS-38582	Date Analyzed:	08/15/20	15 241h										
Test Code:	200.8-W	Date Prepared:	08/14/20	15 2142h										
Antimony		0.175	mg/L	E200.8	0.0000366	0.00200	0.2000	0	87.7	85 - 115				
Arsenic		0.197	mg/L	E200.8	0.0000920	0.00200	0.2000	0	98.5	85 - 115				
Barium		0.186	mg/L	E200.8	0.000538	0.00200	0.2000	0	93.0	85 - 115				
Beryllium		0.196	mg/L	E200.8	0.0000288	0.00200	0.2000	0	98.1	85 - 115				
Cadmium		0.190	mg/L	E200.8	0.000193	0.000500	0.2000	0	94.8	85 - 115				
Chromium		0.187	mg/L	E200.8	0.00154	0.00200	0.2000	0	93.7	85 - 115				
Cobalt		0.186	mg/L	E200.8	0.0000434	0.00400	0.2000	0	92.9	85 - 115				
Copper		0.191	mg/L	E200.8	0.000692	0.00200	0.2000	0	95.6	85 - 115				
Lead		0.188	mg/L	E200.8	0.000264	0.00200	0.2000	0	94.2	85 - 115				
Manganese		0.189	mg/L	E200.8	0.00153	0.00200	0.2000	0	94.3	85 - 115				
Molybdenum		0.187	mg/L	E200.8	0.000206	0.00200	0.2000	0	93.7	85 - 115				
Nickel		0.185	mg/L	E200.8	0.000754	0.00200	0.2000	0	92.7	85 - 115				
Selenium		0.196	mg/L	E200.8	0.0000634	0.00200	0.2000	0	97.9	85 - 115				
Silver		0.187	mg/L	E200.8	0.0000244	0.00200	0.2000	0	93.5	85 - 115				
Thallium		0.185	mg/L	E200.8	0.0000242	0.00200	0.2000	0	92.3	85 - 115				
Vanadium		0.190	mg/L	E200.8	0.000438	0.00440	0.2000	0	95.2	85 - 115				
Zinc		0.993	mg/L	E200.8	0.00476	0.00500	1.000	0	99.3	85 - 115				

Report Date: 8/15/2015 Page 18 of 33



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### Jose Rocha QA Officer

#### **QC SUMMARY REPORT** Lenora Sullivan **Client:** Utah Division of Water Quality **Contact:** Lab Set ID: 1508300 Dept: ME QC Type: LCS Gold King Mine - San Juan River Sampling **Project:** Reporting Spike Ref. **RPD Ref.** RPD Amount Units Method MDL %REC % RPD Result Limit Spiked Limits Limit Qual Analyte Amount Amt Lab Sample ID: LCS-38585 Date Analyzed: 08/15/2015 740h Test Code: HG-DW-245.1 Date Prepared: 08/14/2015 2207h 0.00350 0.00000892 0.000150 0.003330 0 105 85 - 115 E245.1 Mercury mg/L Lab Sample ID: LCS-38586 Date Analyzed: 08/15/2015 805h HG-DW-DIS-245.1 Test Code: Date Prepared: 08/14/2015 2207h 0 Mercury 0.00336 mg/L 0.00000892 0.000150 0.003330 101 85 - 115 E245.1

Report Date: 8/15/2015 Page 19 of 33



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#### Jose Rocha QA Officer

# American West ANALYTICAL LABORATORIES QC SUMMARY REPORT Client: Utah Division of Water Quality Contact: Lenora Sullivan Lab Set ID: 1508300 Dept: ME Project: Gold King Mine - San Juan River Sampling QC Type: MBLK

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	MB-38583	Date Analyzed:	08/15/20	15 541h										
Test Code:	200.7-DIS	Date Prepared:	08/14/20	15 2142h										
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		0.110	mg/L	E200.7	0.0330	1.00								JB
Lab Sample ID:	MB-38581	Date Analyzed:	08/15/20	15 428h										
Test Code:	200.7-W	Date Prepared:	08/14/20	15 2142h										
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
Lab Sample ID:	MB-38584	Date Analyzed:	08/15/20	15 152h										
Test Code:	200.8-DIS	Date Prepared:	08/14/20	15 2142h										
Antimony		< 0.00200	mg/L	E200.8	0.0000366	0.00200								U
Arsenic		0.000422	mg/L	E200.8	0.0000920	0.00200								JB
Barium		< 0.00200	mg/L	E200.8	0.000538	0.00200								U
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		0.000885	mg/L	E200.8	0.000692	0.00200								JB
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		0.00131	mg/L	E200.8	0.000206	0.00200								JB

Report Date: 8/15/2015 Page 20 of 33



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### Jose Rocha QA Officer

### **QC SUMMARY REPORT**

		Den din den d	6.1. p.f	DDD
Project:	Gold King Mine - San Juan River Sampling	QC Type:	MBLK	
Lab Set ID:	1508300	Dept:	ME	
Client:	Utah Division of Water Quality	Contact:	Lenora Sullivan	

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	MB-38584	Date Analyzed:	08/15/20	15 152h										
Test Code:	200.8-DIS	Date Prepared:	08/14/20	15 2142h										
Nickel		< 0.00200	mg/L	E200.8	0.000754	0.00200								U
Selenium		0.000282	mg/L	E200.8	0.0000634	0.00200								JB
Silver		< 0.00200	mg/L	E200.8	0.0000244	0.00200								U
Thallium		0.0000404	mg/L	E200.8	0.0000242	0.00200								JB
Vanadium		0.00167	mg/L	E200.8	0.000438	0.00440								JB
Zinc		< 0.00500	mg/L	E200.8	0.00476	0.00500								U
Lab Sample ID:	MB-38582	Date Analyzed:	08/15/20	15 238h										
Test Code:	200.8-W	Date Prepared:	08/14/20	15 2142h										
Antimony		0.0000866	mg/L	E200.8	0.0000366	0.00200								JB
Arsenic		< 0.00200	mg/L	E200.8	0.0000920	0.00200								U
Barium		< 0.00200	mg/L	E200.8	0.000538	0.00200								U
Beryllium		0.0000313	mg/L	E200.8	0.0000288	0.00200								JB
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		0.0000989	mg/L	E200.8	0.0000634	0.00200								JB
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		< 0.00440	mg/L	E200.8	0.000438	0.00440								U
Zinc		< 0.00500	mg/L	E200.8	0.00476	0.00500								U

Report Date: 8/15/2015 Page 21 of 33



Lab Set ID: 1508300

**Client:** 

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Jose Rocha **QA** Officer

#### **QC SUMMARY REPORT** Lenora Sullivan Utah Division of Water Quality **Contact:** Dept: ME QC Type: MBLK

**Project:** Gold King Mine - San Juan River Sampling

•	e	1	U											
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	MB-38585	Date Analyzed:	08/15/201	5 738h										
Test Code:	HG-DW-245.1	Date Prepared:	08/14/201	5 2207h										
Mercury		< 0.000150	mg/L	E245.1	0.00000892	0.000150								U
Lab Sample ID:	MB-38586	Date Analyzed:	08/15/201	5 803h										
Test Code:	HG-DW-DIS-245.1	Date Prepared:	08/14/201	5 2207h										
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.



Arsenic

Barium

Beryllium

Cadmium

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Jose Rocha QA Officer

### **QC SUMMARY REPORT**

ANALYTICAL LABO	DRATORIES			$\mathbf{v}$										
Lab Set ID: 1	Itah Division of Wate 508300 Jold King Mine - San		ing				Contact: Dept: QC Type	Lenora S ME MS	ullivan					
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: Test Code:	<b>1508300-001CMS</b> 200.7-DIS	Date Analyzed: Date Prepared:	08/15/20 08/14/20											
Sodium		73.9	mg/L	E200.7	0.330	10.0	10.00	68	58.5	70 - 130				2
Lab Sample ID: Test Code:	<b>1508300-001CMS</b> 200.7-DIS	Date Analyzed: Date Prepared:	08/15/20 08/14/20											
Aluminum Calcium		1.12 55.5	mg/L mg/L	E200.7 E200.7	0.0237 0.0401	0.100 1.00	1.000 10.00	0.12 46.2	99.8 92.2	70 - 130 70 - 130				
Iron		0.988	mg/L	E200.7	0.0767	0.100	1.000	0	98.8	70 - 130				
Magnesium		20.4	mg/L	E200.7	0.0294	1.00	10.00	10.5	99.2	70 - 130				
Potassium		14.2	mg/L	E200.7	0.247	1.00	10.00	4.29	99.4	70 - 130				
Lab Sample ID: Test Code:	<b>1508300-004BMS</b> 200.7-W	Date Analyzed: Date Prepared:	08/15/201 08/14/201											
Aluminum		53.2	mg/L	E200.7	0.0237	0.100	1.000	44.3	889	70 - 130				2
Iron		43.6	mg/L	E200.7	0.0767	0.100	1.000	39.1	451	70 - 130				2
Magnesium		33.5	mg/L	E200.7	0.0294	1.00	10.00	22.4	111	70 - 130				
Potassium		21.0	mg/L	E200.7	0.247	1.00	10.00	10.4	106	70 - 130				
Lab Sample ID: Test Code:	<b>1508300-004BMS</b> 200.7-W	Date Analyzed: Date Prepared:	08/15/20 08/14/20											
Calcium		120	mg/L	E200.7	0.401	10.0	10.00	114	59.1	70 - 130				2
Sodium		62.7	mg/L	E200.7	0.330	10.0	10.00	54.8	78.4	70 - 130				
Lab Sample ID: Test Code:	<b>1508300-001CMS</b> 200.8-DIS	Date Analyzed: Date Prepared:	08/15/201 08/14/201											
Antimony		0.183	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00104	90.9	75 - 125				

Report Date: 8/15/2015 Page 23 of 33 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

75 - 125

75 - 125

75 - 125

75 - 125

0.00233

0.157

0.0000429

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101

94.8

100

95.2

0.2000

0.2000

0.2000

0.2000

Chromium 0.187 mg/L E200.8 0.00154 0.00200 0.2000 0 93.6 75 - 125

0.0000920

0.000538

0.0000288

0.000193

0.00200

0.00200

0.00200

0.000500

E200.8

E200.8

E200.8

E200.8

0.205

0.347

0.200

0.190

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.

mg/L

mg/L

mg/L

mg/L



Cobalt

Copper

Nickel

Silver

Selenium

Thallium

Manganese

Molybdenum

Lead

0.214

0.256

0.256

1.56

0.0979

0.222

0.162

0.191

0.180

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

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mg/L

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E200.8

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E200.8

0.0000434

0.000692

0.000264

0.00153

0.000206

0.000754

0.0000634

0.0000244

0.0000242

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### Jose Rocha QA Officer

### **QC SUMMARY REPORT**

ANALYTICAL LABO	ORATORIES			<u>v</u>	SUMM									
Client: L	Jtah Division of Wate	r Quality					<b>Contact:</b>	Lenora S	ullivan					
Lab Set ID: 1	508300						Dept:	ME						
Project: C	Gold King Mine - San	Juan River Sampl	ing				QC Type:	: MS						
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	1508300-001CMS	Date Analyzed:	08/15/20	15 208h										
Test Code:	200.8-DIS	Date Prepared:	08/14/20	5 2142h										
Cobalt		0.185	mg/L	E200.8	0.0000434	0.00400	0.2000	0.000236	92.6	75 - 125				
Copper		0.197	mg/L	E200.8	0.000692	0.00200	0.2000	0.00586	95.5	75 - 125				
Lead		0.191	mg/L	E200.8	0.000264	0.00200	0.2000	0	95.3	75 - 125				
Manganese		0.189	mg/L	E200.8	0.00153	0.00200	0.2000	0.00243	93.1	75 - 125				
Molybdenum		0.198	mg/L	E200.8	0.000206	0.00200	0.2000	0.00587	96.2	75 - 125				
Nickel		0.185	mg/L	E200.8	0.000754	0.00200	0.2000	0.00175	91.8	75 - 125				
Selenium		0.201	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00156	99.7	75 - 125				
Silver		0.188	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000152	93.9	75 - 125				
Thallium		0.186	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000182	93.1	75 - 125				
Vanadium		0.200	mg/L	E200.8	0.000438	0.00440	0.2000	0.00806	95.7	75 - 125				
Zinc		1.01	mg/L	E200.8	0.00476	0.00500	1.000	0	101	75 - 125				
Lab Sample ID:	1508300-004BMS	Date Analyzed:	08/15/20	15 304h										
Test Code:	200.8-W	Date Prepared:	08/14/20	5 2142h										
Antimony		0.0382	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000413	18.9	75 - 125				1
Arsenic		0.177	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0125	82.2	75 - 125				
Barium		1.11	mg/L	E200.8	0.000538	0.00200	0.2000	0.918	93.9	75 - 125				
Beryllium		0.198	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00489	96.7	75 - 125				
Cadmium		0.195	mg/L	E200.8	0.000193	0.000500	0.2000	0.000984	96.9	75 - 125				
Chromium		0.208	mg/L	E200.8	0.00154	0.00200	0.2000	0.0237	92.2	75 - 125				

1

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.

0.00400

0.00200

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0.000772

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92.8

96.1

99.0

48.5

93.9

80.4

95.3

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75 - 125

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**OC SUMMARY REPORT** 

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Jose Rocha QA Officer

#### **Client:** Utah Division of Water Quality **Contact:** Lenora Sullivan Lab Set ID: 1508300 Dept: ME Gold King Mine - San Juan River Sampling **QC Type:** MS **Project:** Reporting Spike Ref. **RPD Ref.** RPD Amount MDL %REC % RPD Result Units Method Limit Spiked Limits Limit Qual Analyte Amount Amt Lab Sample ID: 1508300-004BMS Date Analyzed: 08/15/2015 304h Test Code: 200.8-W Date Prepared: 08/14/2015 2142h 0.243 0.000438 0.00440 0.2000 75 - 125 Vanadium E200.8 0.06 91.5 mg/L Zinc 1.16 mg/L E200.8 0.00476 0.00500 1.000 0.197 96.7 75 - 125 Lab Sample ID: 1508300-004BMS 08/15/2015 748h Date Analyzed: Test Code: HG-DW-245.1 Date Prepared: 08/14/2015 2207h 0.00358 0.00000892 0.000150 0.003330 0.000148 103 80 - 120 mg/L E245.1 Mercury Lab Sample ID: 1508300-003CMS Date Analyzed: 08/15/2015 813h Test Code: HG-DW-DIS-245.1 Date Prepared: 08/14/2015 2207h 0.00334 0.003330 0 E245.1 0.00000892 0.000150 100 85 - 115 Mercury mg/L

<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.

Report Date: 8/15/2015 Page 25 of 33



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Kyle F. Gross Laboratory Director

RPD

Limit Qual

e-mail: awal@awal-labs.com, web: www.awal-labs.com

Jose Rocha QA Officer

% RPD

### **QC SUMMARY REPORT**

Lah Sample	D: 1508300-001CMSD	Date Analyze	d 08/15/20	)15 50/b							
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt
Project:	Gold King Mine - San Jua	an River Sam	pling				QC Type	: MSD			
Lab Set II	<b>D:</b> 1508300						Dept:	ME			
Client:	Utah Division of Water Q	Juality					<b>Contact:</b>	Lenora S	ullivan		

Lab Sample ID: Test Code:	1508300-001CMSD 200.7-DIS	Date Analyzed: Date Prepared:	08/15/201 08/14/201											
Sodium		74.3	mg/L	E200.7	0.330	10.0	10.00	68	62.5	70 - 130	73.9	0.538	20	2
Lab Sample ID:	1508300-001CMSD	Date Analyzed:	08/15/201											
Test Code:	200.7-DIS	Date Prepared:	08/14/201	5 2142h										
Aluminum		1.09	mg/L	E200.7	0.0237	0.100	1.000	0.12	97.2	70 - 130	1.12	2.32	20	
Calcium		53.9	mg/L	E200.7	0.0401	1.00	10.00	46.2	76.6	70 - 130	55.5	2.85	20	
Iron		0.971	mg/L	E200.7	0.0767	0.100	1.000	0	97.1	70 - 130	0.988	1.75	20	
Magnesium		20.0	mg/L	E200.7	0.0294	1.00	10.00	10.5	94.9	70 - 130	20.4	2.14	20	
Potassium		14.0	mg/L	E200.7	0.247	1.00	10.00	4.29	97.1	70 - 130	14.2	1.67	20	
Lab Sample ID:	1508300-004BMSD	Date Analyzed:	08/15/201	5 416h										
Test Code:	200.7-W	Date Prepared:	08/14/201	5 2142h										
Aluminum		48.8	mg/L	E200.7	0.0237	0.100	1.000	44.3	450	70 - 130	53.2	8.60	20	2
Iron		40.2	mg/L	E200.7	0.0767	0.100	1.000	39.1	109	70 - 130	43.6	8.15	20	
Magnesium		32.2	mg/L	E200.7	0.0294	1.00	10.00	22.4	97.8	70 - 130	33.5	3.98	20	
Potassium		20.2	mg/L	E200.7	0.247	1.00	10.00	10.4	97.4	70 - 130	21	4.21	20	
Lab Sample ID:	1508300-004BMSD	Date Analyzed:	08/15/201	5 443h										
Test Code:	200.7-W	Date Prepared:	08/14/201	5 2142h										
Calcium		118	mg/L	E200.7	0.401	10.0	10.00	114	37.2	70 - 130	120	1.84	20	2
Sodium		61.6	mg/L	E200.7	0.330	10.0	10.00	54.8	68.0	70 - 130	62.7	1.66	20	2
Lab Sample ID:	1508300-001CMSD	Date Analyzed:	08/15/201	5 212h										
Test Code:	200.8-DIS	Date Prepared:	08/14/201	5 2142h										
Antimony		0.182	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00104	90.6	75 - 125	0.183	0.389	20	
Arsenic		0.205	mg/L	E200.8	0.0000920	0.00200	0.2000	0.00233	101	75 - 125	0.205	0.0468	20	
Barium		0.344	mg/L	E200.8	0.000538	0.00200	0.2000	0.157	93.7	75 - 125	0.347	0.635	20	
Beryllium		0.199	mg/L	E200.8	0.0000288	0.00200	0.2000	0.0000429	99.6	75 - 125	0.2	0.448	20	
Cadmium		0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0	95.4	75 - 125	0.19	0.188	20	
Chromium		0.189	mg/L	E200.8	0.00154	0.00200	0.2000	0	94.4	75 - 125	0.187	0.856	20	

Report Date: 8/15/2015 Page 26 of 33



Salt Lake City, UT 84119

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### Jose Rocha QA Officer

### **QC SUMMARY REPORT**

Client:Utah Division of WaterLab Set ID:1508300Project:Gold King Mine - San		ling				Contact: Dept: QC Type	ME	ıllivan					
Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:         1508300-001CMSD           Test Code:         200.8-DIS	Date Analyzed: Date Prepared:		15 212h 15 2142h										
Cobalt	0.187	mg/L	E200.8	0.0000434	0.00400	0.2000	0.000236	93.2	75 - 125	0.185	0.619	20	
Copper	0.197	mg/L	E200.8	0.000692	0.00200	0.2000	0.00586	95.4	75 - 125	0.197	0.0914	20	
Lead	0.190	mg/L	E200.8	0.000264	0.00200	0.2000	0	95.0	75 - 125	0.191	0.346	20	
Manganese	0.189	mg/L	E200.8	0.00153	0.00200	0.2000	0.00243	93.1	75 - 125	0.189	0.00146	20	
Molybdenum	0.198	mg/L	E200.8	0.000206	0.00200	0.2000	0.00587	96.3	75 - 125	0.198	0.118	20	
Nickel	0.188	mg/L	E200.8	0.000754	0.00200	0.2000	0.00175	93.0	75 - 125	0.185	1.30	20	
Selenium	0.200	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00156	99.2	75 - 125	0.201	0.463	20	
Silver	0.187	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000152	93.4	75 - 125	0.188	0.456	20	
Thallium	0.187	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000182	93.3	75 - 125	0.186	0.179	20	
Vanadium	0.202	mg/L	E200.8	0.000438	0.00440	0.2000	0.00806	96.7	75 - 125	0.2	1.01	20	
Zinc	1.02	mg/L	E200.8	0.00476	0.00500	1.000	0	102	75 - 125	1.01	0.363	20	
Lab Sample ID: 1508300-004BMSD	Date Analyzed:	08/15/20	15 317h										

 Lab Sample ID:
 1508300-004BMSD
 Date Analyzed:
 08/15/2015
 317h

Test Code: 200.8-W	Date Prepared:	08/14/201	5 2142h										
Antimony	0.0384	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000413	19.0	75 - 125	0.0382	0.412	20	1
Arsenic	0.173	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0125	80.4	75 - 125	0.177	2.07	20	
Barium	1.08	mg/L	E200.8	0.000538	0.00200	0.2000	0.918	79.3	75 - 125	1.11	2.68	20	
Beryllium	0.195	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00489	95.3	75 - 125	0.198	1.50	20	
Cadmium	0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0.000984	95.1	75 - 125	0.195	1.81	20	
Chromium	0.202	mg/L	E200.8	0.00154	0.00200	0.2000	0.0237	89.3	75 - 125	0.208	2.80	20	
Cobalt	0.209	mg/L	E200.8	0.0000434	0.00400	0.2000	0.0271	90.9	75 - 125	0.214	2.27	20	
Copper	0.248	mg/L	E200.8	0.000692	0.00200	0.2000	0.0705	88.6	75 - 125	0.256	3.31	20	
Lead	0.250	mg/L	E200.8	0.000264	0.00200	0.2000	0.0643	92.8	75 - 125	0.256	2.60	20	
Manganese	1.51	mg/L	E200.8	0.00153	0.00200	0.2000	1.36	75.3	75 - 125	1.56	3.08	20	
Molybdenum	0.0957	mg/L	E200.8	0.000206	0.00200	0.2000	0.000772	47.5	75 - 125	0.0979	2.23	20	1
Nickel	0.218	mg/L	E200.8	0.000754	0.00200	0.2000	0.0345	91.6	75 - 125	0.222	2.08	20	
Selenium	0.156	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00132	77.3	75 - 125	0.162	3.86	20	
Silver	0.188	mg/L	E200.8	0.0000244	0.00200	0.2000	0.00038	93.9	75 - 125	0.191	1.49	20	
Thallium	0.176	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000706	87.5	75 - 125	0.18	2.22	20	

#### Report Date: 8/15/2015 Page 27 of 33



Test Code:

Mercury

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**OC SUMMARY REPORT** 

Jose Rocha **OA** Officer

0.00334

3.98

20

#### **Client:** Utah Division of Water Quality **Contact:** Lenora Sullivan Lab Set ID: 1508300 Dept: ME QC Type: MSD **Project:** Gold King Mine - San Juan River Sampling Reporting Spike Ref. **RPD Ref.** RPD Amount MDL %REC % RPD Result Units Method Limit Spiked Limits Limit Qual Analyte Amount Amt Lab Sample ID: 1508300-004BMSD Date Analyzed: 08/15/2015 317h Test Code: 200.8-W Date Prepared: 08/14/2015 2142h 0.239 0.000438 0.00440 0.2000 0.243 1.50 20 Vanadium E200.8 0.06 89.7 75 - 125 mg/L Zinc 1.14 mg/L E200.8 0.00476 0.00500 1.000 0.197 94.4 75 - 125 1.16 2.00 20 Lab Sample ID: 1508300-004BMSD 08/15/2015 750h Date Analyzed: Test Code: HG-DW-245.1 Date Prepared: 08/14/2015 2207h 0.00349 0.0000892 0.000150 0.003330 0.000148 100 80 - 120 0.00358 2.45 20 mg/L E245.1 Mercury Lab Sample ID: 1508300-003CMSD Date Analyzed: 08/15/2015 815h

0.000150

0.003330

0

96.2

85 - 115

0.00320

Date Prepared:

08/14/2015 2207h

mg/L

E245.1

0.00000892

<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.

HG-DW-DIS-245.1

Report Date: 8/15/2015 Page 28 of 33



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Jose Rocha QA Officer

#### **OC SUMMARY REPORT Client:** Utah Division of Water Quality **Contact:** Lenora Sullivan Lab Set ID: 1508300 Dept: WC Gold King Mine - San Juan River Sampling **QC Type:** DUP **Project:** Reporting Spike Ref. **RPD Ref.** RPD Amount MDL %REC Result Units Method Limit Limits % RPD Limit Qual Analyte Spiked Amount Amt Lab Sample ID: 1508300-001ADUP Date Analyzed: 08/15/2015 542h Test Code: COND-W-2510B 653 SM2510B 0.436 2.00 659 0.915 5 Conductivity µmhos/cm 1508300-005ADUP Lab Sample ID: Date Analyzed: 08/14/2015 2003h Test Code: PH-4500H+B 1.00 5 pH @ 25° C 8.19 SM4500-H+B 1.00 8.21 0.244 pH Units Lab Sample ID: 1508300-002ADUP Date Analyzed: 08/14/2015 2040h Test Code: TDS-W-2540C 460 5 Total Dissolved Solids mg/L SM2540C 30.6 50.0 630 31.2 @ Lab Sample ID: 1508300-002ADUP 08/14/2015 2020h Date Analyzed: Test Code: TSS-W-2540D Total Suspended Solids 6,640 SM2540D 142 150 6580 0.908 5 mg/L

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

Report Date: 8/15/2015 Page 29 of 33



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### Jose Rocha QA Officer

#### **QC SUMMARY REPORT** Lenora Sullivan **Client:** Utah Division of Water Quality **Contact:** Lab Set ID: 1508300 Dept: WC QC Type: LCS Gold King Mine - San Juan River Sampling **Project:** Reporting Amount Spike Ref. **RPD Ref.** RPD Result Units Method MDL %REC % RPD Limit Qual Limit Spiked Limits Analyte Amount Amt

Lab Sample ID: Test Code:	<b>LCS-R81699</b> 300.0-W	Date Analyzed:	08/14/20	15 2139h						
Chloride Sulfate		4.90 4.81	mg/L mg/L	E300.0 E300.0	0.00751 0.0211	0.100 0.750	5.000 5.000	0 0	97.9 96.2	90 - 110 90 - 110
Lab Sample ID: Test Code:	LCS-R81685 ALK-W-2320B	Date Analyzed:	08/15/20	15 606h						
Alkalinity (as Ca	CO3)	49,900	mg/L	SM2320B	1.86	10.0	50,000	0	99.7	90 - 110
Lab Sample ID: Test Code:	LCS-R81679 COND-W-2510B	Date Analyzed:	08/15/20	15 542h						
Conductivity		1,000	µmhos/cm	SM2510B	0.436	2.00	1,000	0	100	98 - 102
Lab Sample ID: Test Code:	LCS-R81674 NO2/NO3-W-353.2	Date Analyzed:	08/14/20	15 2330h						
Nitrate/Nitrite (as	s N)	0.975	mg/L	E353.2	0.00833	0.0100	1.000	0	97.5	90 - 110
Lab Sample ID: Test Code:	<b>LCS-R81690</b> PH-4500H+B	Date Analyzed:	08/14/20	15 2003h						
pH @ 25° C		9.01	pH Units	SM4500-H+B	1.00	1.00	9.000	0	100	98 - 102
Lab Sample ID: Test Code:	LCS-38587 PO4-W-4500PF	Date Analyzed: Date Prepared:								
Phosphate, Total	(as P)	0.998	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0	99.8	90 - 110
Lab Sample ID: Test Code:	<b>LCS-R81698</b> TDS-W-2540C	Date Analyzed:	08/14/20	15 2040h						
Total Dissolved S	Solids	214	mg/L	SM2540C	6.13	10.0	205.0	0	104	80 - 120
Lab Sample ID: Test Code:	LCS-R81702 TSS-W-2540D	Date Analyzed:	08/14/20	15 2020h						
Total Suspended	Colida	95.0	mg/L	SM2540D	2.83	3.00	100.0	0	95.0	80 - 120

Report Date: 8/15/2015 Page 30 of 33



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Jose Rocha QA Officer

# **<u>QC SUMMARY REPORT</u>**

Client: U	tah Division of Water	Quality					Contact:	Lenora S	ullivan					
Lab Set ID: 1:	508300						Dept:	WC						
Project: G	old King Mine - San .	Juan River Sampl	ing				QC Type:	MBLK						
Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: Test Code:	<b>MB-R81699</b> 300.0-W	Date Analyzed:	08/14/20	15 2122h										
Chloride Sulfate		< 0.100 < 0.750	mg/L mg/L	E300.0 E300.0	0.00751 0.0211	0.100 0.750								U U
Lab Sample ID: Test Code:	<b>MB-R81685</b> ALK-W-2320B	Date Analyzed:	08/15/20	15 606h										
Alkalinity (as Ca	CO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Bicarbonate (as C		< 10.0	mg/L	SM2320B	1.86	10.0								U
Carbonate (as Ca	.CO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Lab Sample ID: Test Code:	<b>MB-R81679</b> COND-W-2510B	Date Analyzed:	08/15/20	15 542h										
Conductivity		< 2.00	µmhos/cm	SM2510B	0.436	2.00								U
Lab Sample ID: Test Code:	<b>MB-R81674</b> NO2/NO3-W-353.2	Date Analyzed:	08/14/20	15 2329h										
Nitrate/Nitrite (a	s N)	< 0.0100	mg/L	E353.2	0.00833	0.0100								U
Lab Sample ID: Test Code:	<b>MB-38587</b> PO4-W-4500PF	Date Analyzed: Date Prepared:	08/15/20 08/15/20											
Phosphate, Total	(as P)	< 0.0500	mg/L	SM4500-P-F	0.0212	0.0500								U
Lab Sample ID: Test Code:	<b>MB-R81698</b> TDS-W-2540C	Date Analyzed:	08/14/20	15 2040h										

Total Dissolved Solids < 10.0 mg/L SM2540C 6.13 10.0 U Lab Sample ID: MB-R81702 08/14/2015 2020h Date Analyzed: 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.

Report Date: 8/15/2015 Page 31 of 33



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**OC SUMMARY REPORT** 

Jose Rocha QA Officer

#### **Client:** Utah Division of Water Quality **Contact:** Lenora Sullivan Lab Set ID: 1508300 Dept: WC **QC Type:** MS **Project:** Gold King Mine - San Juan River Sampling Reporting Spike Ref. **RPD Ref.** RPD Amount MDL %REC % RPD Result Units Method Limit Limits Limit Qual Analyte Spiked Amount Amt Lab Sample ID: 1508300-001AMS Date Analyzed: 08/14/2015 2212h Test Code: 300.0-W 0.0751 1.00 50.00 12.7 90 - 110 Chloride 61.6 E300.0 97.8 mg/L Sulfate 221 E300.0 0.211 7.50 50.00 173 95.3 90 - 110 mg/L Lab Sample ID: 1508300-001AMS Date Analyzed: 08/15/2015 606h Test Code: ALK-W-2320B 228 SM2320B 1.86 10.0 100.0 127 101 80 - 120 Alkalinity (as CaCO3) mg/L Lab Sample ID: 1508300-005AMS 08/14/2015 2340h Date Analyzed: Test Code: NO2/NO3-W-353.2 Nitrate/Nitrite (as N) 9.86 E353.2 0.0833 0.100 10.00 0.539 93.2 90 - 110 mg/L Lab Sample ID: 1508300-001DMS Date Analyzed: 08/15/2015 1044h Test Code: PO4-W-4500PF Date Prepared: 08/15/2015 750h SM4500-P-F 0.106 0.250 1.000 8.98 158 90 - 110 2 Phosphate, Total (as P) 10.6 mg/L

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



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Jose Rocha QA Officer

### **QC SUMMARY REPORT**

ANALYTICAL LABORATO	JRIES													
Client: Utah I	Division of Water	Quality					<b>Contact:</b>	Lenora Su	ullivan					
Lab Set ID: 15083	300						Dept:	WC						
Project: Gold I	King Mine - San J	uan River Sampl	ing				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>8300-001AMSD</b> ).0-W	Date Analyzed:	08/14/20	15 2229h										
Chloride		60.9	mg/L	E300.0	0.0751	1.00	50.00	12.7	96.4	90 - 110	61.6	1.17	20	
Sulfate		219	mg/L	E300.0	0.211	7.50	50.00	173	90.6	90 - 110	221	1.08	20	
•	<b>8300-001AMSD</b> K-W-2320B	Date Analyzed:	08/15/20	15 606h										
Alkalinity (as CaCO3)	)	232	mg/L	SM2320B	1.86	10.0	100.0	127	105	80 - 120	228	1.44	10	
•	<b>8300-005AMSD</b> 2/NO3-W-353.2	Date Analyzed:	08/14/20	15 2342h										
Nitrate/Nitrite (as N)		9.62	mg/L	E353.2	0.0833	0.100	10.00	0.539	90.9	90 - 110	9.86	2.37	10	
•	<b>8300-001DMSD</b> 4-W-4500PF	Date Analyzed: Date Prepared:												
Phosphate, Total (as P)	))	10.7	mg/L	SM4500-P-F	0.106	0.250	1.000	8.98	172	90 - 110	10.6	1.32	10	2

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

Report Date: 8/15/2015 Page 33 of 33

American West Analytical Laboratories Same Day Rush

### **REVISED:** 8/17/2015

The collection time for sample 1508300-004 has been GenericEDD\_QC corrected. MC

WORK O	RDER Summary				Wor	k Order: 15	508300	Page 1 of 5
Client:	Utah Division of Water Quality				D	ue Date: 8/1	7/2015	
Client ID:	UTD200		Contact	: Lenora Sulliva	n			
Project:	Gold King Mine - San Juan River Sa	mpling	QC Leve	el: II+ MDL	W	O Type: Star	ndard	
Comments:	Same Day Rush. QC2+. Dissolved me CC: Jim Harris and Trisha Johnson;		-			• 1		EDD.
Sample ID	Client Sample ID	Collected Date	<b>Received Date</b>	Test Code	Matrix	Sel	Storage	
1508300-001A	San Juan R at Mexican Hat US163 Xing (4953000)	8/14/2015 1143h	8/14/2015 2000h	300.0-W	Aqueous	$\checkmark$	df - wc	1
				2 SEL Analytes: CL	so4			
				ALK-W-2320B		$\checkmark$	df - wc	
				3 SEL Analytes: AL	K ALKB ALKC			
				COND-W-2510B			df - wc	
				NO2/NO3-W-353.2			df - wc	
				PH-4500H+B			df - wc	
				TDS-W-2540C			df - wc	
1500200 0015				TSS-W-2540D			df - wc	
1508300-001B				200.7-W	CA EE MC K NA	$\checkmark$	df - total metals	
				6 SEL Analytes: AL 200.7-W-PR	CATEMOKINA		df - total metals	
				200.7-W-I K 200.8-W			df - total metals	
					B AS BA BE CD CR CO CU PB			
				200.8-W-PR			df - total metals	
				HARD-2340B			df - total metals	
				HG-DW-245.1			df - total metals	
				HG-DW-PR			df - total metals	
1508300-001C				200.7-DIS		$\checkmark$	df - dis metals	2
				6 SEL Analytes: AL	CA FE MG K NA			
				200.7-DIS-PR			df - dis metals	
				200.8-DIS		$\checkmark$	df - dis metals	
				17 SEL Analytes: SI AG TL V ZN	B AS BA BE CD CR CO CU PB	MN MO NI SE		
				200.8-DIS-PR			df - dis metals	
				FILTER-PR			df - dis metals	

 Printed: 8/17/2015
 FOR LABORATORY USE ONLY [fill out on page 1]:
 % M
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 TAT
 QC
 HOK\_\_\_\_\_
 HOK\_\_\_\_\_
 COC Emailed\_\_\_\_\_\_

WORK O	RDER Summary					Work Order: <b>1508300</b> Page 2 of 5
Client:	Utah Division of Water Quality					Due Date: 8/17/2015
Sample ID	Client Sample ID	Collected Date	<b>Received Date</b>	Test Code	Matrix	Sel Storage
1508300-001C	San Juan R at Mexican Hat US163 Xing (4953000)	8/14/2015 1143h	8/14/2015 2000h	HARD-2340B	Aqueous	df - dis metals
				1 SEL Analytes: HAR	D	
				HG-DW-DIS-245.1		df - dis metals
				HG-DW-DIS-PR		df - dis metals
1508300-001D				PO4-W-4500PF		df -po4, no2/no3
				PO4-W-PR		df -po4, no2/no3
1508300-002A	San Juan R at Sand Island (4953250)	8/14/2015 1102h	8/14/2015 2000h	300.0-W	Aqueous	df - wc
				2 SEL Analytes: CL S	04	
				ALK-W-2320B		df - wc
				3 SEL Analytes: ALK	ALKB ALKC	
				COND-W-2510B		df - wc
				NO2/NO3-W-353.2		df - wc
				PH-4500H+B		df - wc
				TDS-W-2540C		df - wc
				TSS-W-2540D		df - wc
508300-002B				<b>200.7-W</b> 6 SEL Analytes: AL C	A FE MG K NA	✓ df - total metals
				200.7-W-PR		df - total metals
				200.8-W		df - total metals
					AS BA BE CD CR CO	CU PB MN MO NI SE
				200.8-W-PR		df - total metals
				HARD-2340B		df - total metals
				HG-DW-245.1		df - total metals
				HG-DW-PR		df - total metals
1508300-002C				200.7-DIS		df - dis metals
				6 SEL Analytes: AL C	A FE MG K NA	
				200.7-DIS-PR		df - dis metals
				200.8-DIS		df - dis metals
				17 SEL Analytes: SB A AG TL V ZN	AS BA BE CD CR CO	CU PB MN MO NI SE
				200.8-DIS-PR		df - dis metals
				FILTER-PR		df - dis metals
				HARD-2340B		df - dis metals
				1 SEL Analytes: HAR	D	
				HG-DW-DIS-245.1		df - dis metals
				HG-DW-DIS-PR		df - dis metals
1508300-002D				PO4-W-4500PF		df -po4, no2/no3

 Printed: 8/17/2015
 FOR LABORATORY USE ONLY [fill out on page 1]:
 % M
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 HOK\_\_\_\_\_
 COC Emailed\_\_\_\_\_\_

WORK O	RDER Summary				Wor	k Order: 15	508300 Page 3 of			
Client:	Utah Division of Water Quality	D	Due Date: 8/17/2015							
Sample ID	Client Sample ID	Collected Date	<b>Received Date</b>	Matrix	Sel Storage					
1508300-002D	San Juan R at Sand Island (4953250)	8/14/2015 1102h	8/14/2015 2000h	PO4-W-PR	Aqueous		df -po4, no2/no3			
1508300-003A	San Juan River at Town of Montezuma (4953990)	8/14/2015 0955h	8/14/2015 2000h	300.0-W	Aqueous	$\checkmark$	df - wc			
				2 SEL Analytes: Cl	L SO4					
				ALK-W-2320B		$\checkmark$	df - wc			
				3 SEL Analytes: Al	LK ALKB ALKC		10			
				COND-W-2510B			df - wc			
				NO2/NO3-W-353.2			df - wc			
				PH-4500H+B			df - wc			
				TDS-W-2540C			df - wc			
				TSS-W-2540D			df - wc			
1508300-003B				200.7-W		$\checkmark$	df - total metals			
				6 SEL Analytes: Al	L CA FE MG K NA		16 + + + 1 + + 1-			
				200.7-W-PR			df - total metals			
					5B AS BA BE CD CR CO CU PB	MN MO NI SE	df - total metals			
				AG TL V ZN			16 (c)(-1)(-1-			
				200.8-W-PR			df - total metals			
				HARD-2340B			df - total metals			
				HG-DW-245.1			df - total metals			
				HG-DW-PR			df - total metals			
1508300-003C				200.7-DIS		$\checkmark$	df - dis metals			
				6 SEL Analytes: Al	L CA FE MG K NA		df - dis metals			
				200.7-DIS-PR						
				200.8-DIS 17 SEL Analytes: S AG TL V ZN	SB AS BA BE CD CR CO CU PB	MN MO NI SE	df - dis metals			
				200.8-DIS-PR			df - dis metals			
				FILTER-PR			df - dis metals			
				HARD-2340B			df - dis metals			
				1 SEL Analytes: HA	ARD					
				HG-DW-DIS-245.1			df - dis metals			
				HG-DW-DIS-PR			df - dis metals			
1508300-003D				PO4-W-4500PF			df -po4, no2/no3			
				PO4-W-PR			df -po4, no2/no3			
1508300-004A	San Juan R at US160 Xing in CO (4954000)	8/14/2015 0850h	8/14/2015 2000h	<b>300.0-W</b> 2 SEL Analytes: Cl	Aqueous L SO4		df - wc			
				ALK-W-2320B 3 SEL Analytes: Al	LK ALKB ALKC	$\checkmark$	df - wc			

WORK O	RDER Summary				Wo	rk Order: 15	508300 Page 4	of 5
Client:	Utah Division of Water Quality				Ι	Due Date: 8/1	7/2015	
Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508300-004A	San Juan R at US160 Xing in CO (4954000)	8/14/2015 0850h	8/14/2015 2000h	COND-W-2510B	Aqueous		df - wc	1
				NO2/NO3-W-353.2			df - wc	
				PH-4500H+B			df - wc	
				TDS-W-2540C			df - wc	
				TSS-W-2540D			df - wc	
1508300-004B				200.7-W		$\checkmark$	df - total metals	
				6 SEL Analytes: AL CA	FE MG K NA			
				200.7-W-PR			df - total metals	
				200.8-W		$\checkmark$	df - total metals	
				17 SEL Analytes: SB AS AG TL V ZN	BA BE CD CR CO CU PI	3 MN MO NI SE		
				200.8-W-PR			df - total metals	
				HARD-2340B			df - total metals	
				HG-DW-245.1			df - total metals	
				HG-DW-PR			df - total metals	
1508300-004C				200.7-DIS		$\checkmark$	df - dis metals	2
				6 SEL Analytes: AL CA	FE MG K NA			
				200.7-DIS-PR			df - dis metals	
				200.8-DIS		$\checkmark$	df - dis metals	
				17 SEL Analytes: SB AS AG TL V ZN	BA BE CD CR CO CU PI	3 MN MO NI SE		
				200.8-DIS-PR			df - dis metals	
				FILTER-PR			df - dis metals	
				HARD-2340B		$\checkmark$	df - dis metals	
				1 SEL Analytes: HARD				
				HG-DW-DIS-245.1			df - dis metals	
				HG-DW-DIS-PR			df - dis metals	
1508300-004D				PO4-W-4500PF			df -po4, no2/no3	1
				PO4-W-PR			df -po4, no2/no3	
1508300-005A	San Juan R at Clay Hills	8/14/2015 1433h	8/14/2015 2000h	300.0-W	Aqueous	$\checkmark$	df - wc	1
				2 SEL Analytes: CL SO4	4			
				ALK-W-2320B		$\checkmark$	df - wc	
				3 SEL Analytes: ALK Al	LKB ALKC			
				COND-W-2510B			df - wc	
				NO2/NO3-W-353.2			df - wc	
				PH-4500H+B			df - wc	
				TDS-W-2540C			df - wc	
				TSS-W-2540D			df - wc	

WORK O	RDER Summary	Wor	k Order: 15	508300	Page 5 of 5			
Client:	Utah Division of Water Quality				D	ue Date: 8/1	7/2015	
Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508300-005B	San Juan R at Clay Hills	8/14/2015 1433h	8/14/2015 2000h	200.7-W	Aqueous	$\checkmark$	df - total metals	1
				6 SEL Analytes: Al	L CA FE MG K NA			
				200.7-W-PR			df - total metals	
				200.8-W		$\checkmark$	df - total metals	
				17 SEL Analytes: S AG TL V ZN	SB AS BA BE CD CR CO CU PB	MN MO NI SE		
				200.8-W-PR			df - total metals	
				HARD-2340B			df - total metals	
				HG-DW-245.1			df - total metals	
				HG-DW-PR			df - total metals	
1508300-005C				200.7-DIS			df - dis metals	2
				6 SEL Analytes: Al	L CA FE MG K NA			
				200.7-DIS-PR			df - dis metals	
				200.8-DIS		$\checkmark$	df - dis metals	
				17 SEL Analytes: S AG TL V ZN	SB AS BA BE CD CR CO CU PB	MN MO NI SE		
				200.8-DIS-PR			df - dis metals	
				FILTER-PR			df - dis metals	
				HARD-2340B		$\checkmark$	df - dis metals	
				1 SEL Analytes: H	ARD			
				HG-DW-DIS-245.1			df - dis metals	
				HG-DW-DIS-PR			df - dis metals	
1508300-005D				PO4-W-4500PF			df -po4, no2/no3	1
				PO4-W-PR			df -po4, no2/no3	

	Utah Division PO Box 1448	70				Ph	one: 8	Lenora Si 301-536-	4367	L	Page 1 of 1
	Salt Lake Cit							301-536-			QC Level: 2+
Project Name:	Gold King Mi	ne - San Ji	uan F	River	Sampling	g Ei		enoras@			
PO#:			- <del></del>				-	amesnan		ah.gov (please copy (	
nple ID: N JUAN R AT MEXICAN HAT US163 XING (4953000) N JUAN R AT SAND ISLAND (4953250) n Juan River at Town of Montezuma <b>49539960</b> N JUAN R AT US160 XING IN CO (4954000) N JVAN R. AT CLAY HILLS	Date Sampled <b>8/14/15</b> <b>8/14/15</b> <b>8/14/15</b> <b>8/14/15</b> <b>8/14/15</b> <b>100</b>	Time 1/93 1/02 0955 0950 1433	4 U 4 U 4 U		SS, Conductivity No No	Total TAL Metals + Mo + Hardness (200.7: Al, Ca, Fe, K, Mg, Na, 200.8: Sb, As, Bab Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, N, Ag, Se, Tl, V, Zn, 245.1: Hg)	<b>d TAL Metals + Mo + Hardne</b> M, Ca, Fe, K, Mg, Na, <b>200.8</b> : <sup>9</sup>	Ba, Be, Cd, CT, Co, Cu, FD, MII, MO, N, AB, Se, TJ, V, Zn, 245.1: Hg		Lab Filed metals disso filed metals disso filed metals argue a literation Dissolved Metals samples have been field filtered. Samples collected from river monitoring following a mine waste dump release. Please flag any concentrations detected less than RL and at or greater than the MDL with a J qualifier. Please include EDD.	Laboratory USC Only Samples Were: 1 Shipped a hand delivered 2 Ambient r Chilled 3 Temperature 2 4 4 Received Broken/Leaking (Improperly Sealed) 7 N 5 Properly Preserved 5 Properly Preserved 5 Properly Preserved 5 Properly Preserved 5 Properly Reserved 6 Received Within Holding Times 7 N 6 Received Within Holding Times 7 N 8 Received Was: 1 Present on Outer Pastrage 7 N 8 Received Times 7 N 8 Received Sample 7 N 8 Received Sample 8 Received Sample 7 N 8 Received Sample 7 N 8 Received Sample 8 Recei
ecial Instructions:	A	I	1 1		L		L				Hills identifica a
Guish Stepy Stature			Ľ	Date:	W 1.15	Received	by: Signati		+2	· Aleral	Hills Rud 8/1 Date: 1CIA. 15
Hand Torners UDGUNS -			Т	ìmeR	232	Print Nam	ıe	Kent	- 11	anticon	Time: 5527 A.A.
iquished by: Signature Arain We Hours				Date: 14	Arg/5		by: Signati	ure Ceff	Þ	Les -	Date: 14 Aug
Name Kent Harrison			1	Anne: 7	-14500	Print Nam	Ē	- <u>v;FC0</u>	<u> </u>	radars	124> Phs
ieived by 92607.92 20:00 KyleF, Gross 8/14/	<b>X</b> .			n.	1210	niek	od 1	W?	al)	tades	20:00 PH

### Lab Set ID: 1508300

#### **Preservation Check Sheet**

Sample Set Extension and pH

Analysis	Preservative	-001	-002	- 003	-004										
Ammonia	pH <2 H <sub>2</sub> SO <sub>4</sub>														
COD	pH <2 H <sub>2</sub> SO <sub>4</sub>														
Cyanide	pH>12 NaOH														
Metals	pH <2 HNO <sub>3</sub>	Yes	Yes	Yes	Yes	Yes									
NO <sub>2</sub> & NO <sub>3</sub>	$pH < 2 H_2SO_4$		See	unpre	serve	d bo	H1e-	- R	と						
0&G	pH <2 HCL														
Phenols	pH <2 H <sub>2</sub> SO <sub>4</sub>														
Sulfide	pH > 9NaOH,					1							1		
	Zn Acetate														
TKN	pH <2 H <sub>2</sub> SO <sub>4</sub>														
T PO <sub>4</sub>	pH <2 H <sub>2</sub> SO <sub>4</sub>	Yes	Yes	Yes	425	les									
				•											
			-												
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·····															

Procedure: 1) Pour a small amount of sample in the sample lid

2) Pour sample from Lid gently over wide range pH paper

3) **Do Not** dip the pH paper in the sample bottle or lid

4) If sample is not preserved, properly list its extension and receiving pH in the appropriate column above

5) Flag COC, notify client if requested

6) Place client conversation on COC

7) Samples may be adjusted

Frequency: All samples requiring preservation

- \* The sample required additional preservative upon receipt.
- + The sample was received unpreserved.
- ▲ The sample was received unpreserved and therefore preserved upon receipt.
- # The sample pH was unadjustable to a pH < 2 due to the sample matrix.
- The sample pH was unadjustable to a  $pH > \_\___$  due to the sample matrix interference.