



STATE OF
COLORADO

Musick - DNR, Jason <jason.musick@state.co.us>

2015 Bow2 AHR Adequacy Review

1 message

Tamme Bishop <tamme.jestover@bresnan.net>

Mon, Oct 31, 2016 at 10:06 AM

To: "Musick - DNR, Jason" <jason.musick@state.co.us>

Cc: Bill Bear <BBear@bowieresources.com>, Basil Bear <BasilBear@bowieresources.com>

Hi Jason, please see the attached response and let me know if you have any questions. Thanks. <<...>>

Tamme Bishop, P.E.

JE Stover & Associates, Inc.

2352 N. 7th Street, Unit B

Grand Junction, CO 81501

970-245-4101



BOW2_2015 AHR Adequacy response.pdf

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MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

October 31, 2016

Jason Musick
Division of Reclamation, Mining & Safety
1313 Sherman St., Room 215
Denver, CO 80203

Re: Bowie Resources, LLC, Bowie No. 2 Mine
Response to DRMS' 2015 AHR Review
Permit C-1996-083

Dear Mr. Music:

DRMS' letter dated October 18, 2016 transmitted its adequacy comments on the 2015 Annual Hydrology Report. On behalf of Bowie Resources, LLC, BRL, following are its responses to the DRMS' comments and concerns:

1. BRL:

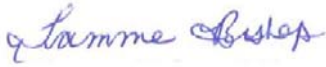
-  SW-05: The contractor performing the water monitoring only grabbed one sample for SW-05 during the 2015 AHR. A note has been added to **Figure 93** for clarification.
-  D34-14 -- No laboratory data was reported for the following List 1 parameters, Nitrate-Nitrite, Oil and Grease, Residue Filterable-TDS and Iron (dissolved)
-  Deer Up: As noted in the AHR, no List 2 parameters were collected for August; however, List 2 parameters were collected on September 9. The note on **Figure 73** has been clarified.
-  Hub-Low: Laboratory data was not provided for Oil and Grease.
-  Hub-Up: Laboratory data was not provided for Oil and Grease.
-  NFG-low: Chloride was mistakenly left off of the Table, a note was added that the List 2 parameters were sampled for and evaluated in September, the data for Nitrate was erroneously input into the wrong row. Please see revised **Figure 84**.
-  NFG-Up: Laboratory testing was not conducted for aluminum during the 3Q. A note was added that the List 2 parameters were sampled for and evaluated during September. Data for Nitrate was provided, however, the data for Nitrite was erroneously input into the wrong row. Please see revised **Figure 86**.
-  SW-12: Iron (dissolved) was mistakenly left off of the June data. Please see revised **Figure 98**.
-  DH-39 & 49: The contractor only took three sets of field parameters only one set

of parameters. A note has been added to describe the sampling adequacy.
Please see revised **Figures 103 and 105** for 2015.

 DH-49: Laboratory data was not provided for Iron & Magnesium (dissolved).

Please feel free to contact me with questions.

Sincerely,



Tamme Bishop, P.E.
Project Engineer

Attachments:

Cc: Bill Bear
Basil Bear

Deer-up
Canal - Deer Trail Ditch
Elevation - 5960

Initiated	6/14/1995	6/14/1995	6/14/1995	6/14/1995
Activated	3/30/1997	3/30/1997	3/30/1997	3/30/1997
Date	12/30/2015	9/8/2015	6/9/2015	2/19/2015

Field Parameters	UNITS	Baseline			Operation						
		Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0.8	1.8	3.5	0.2	1.7	4.8		1.44	1.50	1.44
Water Level in Flume	Feet	0.23	0.37	0.59	0.08	0.36	0.72	**	0.33	0.34	0.33
FieldComment											
pH	su	6.4	8.5	9.1	7.4	8.4	9.1	8.6	8.9	8.3	8.4
Conductivity	umhos/cm	70	286	668	50	203	440	260	260	110	280
Temperature	Celsius	0.8	11.4	20.3	0.2	9.9	22.1	0.8	15.2	11.0	3.0
DO	mg/L	0.0	3.5	7.7	0.0	9.0	12.0	**	9.2	**	10
Lab Parameters	UNITS										
Bicarbonate	mg/L	51.0	73.0	117.0	28.6	106.2	144.0	137		47.8	
Hydroxide	mg/L	0	0	0	0	0	0				
Chloride	mg/L	<MDL	1.67	3.00	<MDL	24.95	190.50	1.4	1.1	<MDL	
Chromium III CrIII	mg/L				<MDL	<MDL	<MDL		<MDL		
Chromium VI CrIV	mg/L				<MDL	0.01	0.01		<MDL		
Cyanide, Total	mg/L				<MDL	<MDL	<MDL		<MDL		
Conductivity	umhos/cm	100	148	235	85	261	573	209		85.2	
Hardness	mg/L	42	61	94	<MDL	98	168	104	95.4	48.3	
Nitrate-Nitrite	mg/L	<MDL	0.02	0.07	<MDL	0.20	1.25	<MDL	<MDL	<MDL	
Nitrate	mg/L	<MDL	0.02	0.07	<MDL	0.36	2.87	0.011			
Nitrite	mg/L	<MDL	0.01	0.02	<MDL	0.003	0.016	<MDL	<MDL		
Ammonia	mg/L				<MDL	0.149	0.290		0.06		
Oil and Grease	mg/L				<MDL	4.3	5.5				
pH	su	7.6	7.8	8.1	6.4	8.0	8.7	8.2	8.7	8.0	
Phosphate	mg/L	<MDL	0.01	0.03	<MDL	0.02	0.06	0.057		0.028	
ResidueFilterable-TDS	mg/L	50	100	150	60	193	475	160	155	92	
ResidueNonFilterable-TSS	mg/L	<MDL	25	52	<MDL	12	40	22.6		16	
SAR		0.24	0.37	0.62	<MDL	0.76	2.29	0.68		0.25	
Sulfate	mg/L	<MDL	10	20	<MDL	12.7	37.5	10.6	7.4	3.4	
Sulfide S	mg/L				<MDL	0.13	0.13		<MDL		
Aluminum (TREC)	mg/L	0.24	1.09	1.77	<MDL	0.35	2.03	0.41		0.62	
Arsenic (TREC)	mg/L	<MDL	0.0003	0.0010	<MDL	0.0054	0.0300	<MDL	<MDL	<MDL	
Boron	mg/L				<MDL	0.82	1.40		<MDL		
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.006	0.040	<MDL	<MDL	<MDL	
Calcium (TREC)	mg/L	11.8	17.2	26.5	8.29	29.42	134.00	29.4	27.4	134	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.004	0.019	<MDL	<MDL	<MDL	
Iron (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.06	0.25	0.048	0.0932	0.1	
Iron (TREC)	mg/L	0.38	1.19	1.85	0.03	13.52	618.00	0.72	618.00	0.79	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0104	0.1000	<MDL	<MDL	<MDL	
Magnesium (TREC)	mg/L	3.0	4.4	6.7	2.5	8.1	17.6	7.5	6.6	3.4	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.8	6.7		0.022		
Manganese (TREC)	mg/L	0.02	0.03	0.03	0.002	0.591	26.700	26.7	<MDL	0.03	
Mercury (TREC)	mg/L	<MDL	0.0001	0.0002	<MDL	0.00007	0.0004	<MDL	<MDL	<MDL	
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.003	0.011	<MDL		<MDL	
Nickel	mg/L				<MDL	0.0088	0.0120		<MDL		
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL	<MDL	0.0039	0.0230	<MDL	<MDL	<MDL	
Silver	mg/L				<MDL	0.0030	0.0030		<MDL		
Sodium (TREC)	mg/L	3.6	7.1	13.8	3.8	20.0	66.5	14.5	<MDL	3.92	
Zinc (TREC)	mg/L	0.01	0.02	0.03	<MDL	0.01	0.04	<MDL	<MDL	<MDL	

The upper end of Deer Trail Ditch is monitored at the headgate located on Hubbard Creek. This monitoring point is fitted with a 2' Parshall Flume.

*The Contractor who conducts the field monitoring forgot to take August sample for Surface List #2 Analysis, however a sample for Surface List #2 was collected in September.

** No data in field notes

NFG-low
North Fork - Drainage System
Elevation - 5680

Initiated	9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated	3/31/1997	3/31/1997	3/31/1997	3/31/1997
Date	12/30/2015	9/8/2015	6/9/2015	2/19/2015

Field Parameters	UNITS	Summary Information											
		Baseline				Operation							
		Min	Ave	Max		Min	Ave	Max					
Flow	CFS	99	292	610		53	487	2910		83	269	1660	66
Field Comment													
pH	su	8.1	8.4	8.7		7.6	8.3	9.1		8.5	8.8	8.1	9.0
Conductivity	umhos/cm	160	180	200		50	187	320		230	220	100	240
Temperature	Celsius	4.0	8.5	14.6		0.3	11.5	22.6		0.4	18.5	12.2	4.9
DO	mg/L					0.0	8.5	11.5		10.6	8.3	10	9.7
Lab Parameters	UNITS												
		Min	Ave	Max		Min	Ave	Max					
Bicarbonate	mg/L	95	100	105		28.1	83.9	138.7		106		43.9	
Chloride	mg/L	2.00	2.50	3.00		<MDL	31.08	288.30		3	2.2	0.61	
Chromium III CrIII	mg/L					<MDL	<MDL	<MDL			<MDL		
Chromium VI CrIV	mg/L					<MDL	<MDL	<MDL			<MDL		
Cyanide, Total	mg/L					<MDL	<MDL	<MDL			<MDL		
Conductivity	umhos/cm	201	222	242		85	224	754				85.3	
Hardness	mg/L	84	85	85		<MDL	87.20	270.40		93	88.8	42.3	
Nitrate	mg/L	<MDL	0.08	0.16		<MDL	0.38	3.90		0.1	<MDL	0.049	
Nitrate-Nitrite	mg/L	0.00	0.08	0.16		<MDL	<MDL	<MDL					
Nitrite	mg/L	<MDL	<MDL	<MDL		<MDL	0.002	0.010		<MDL	<MDL	<MDL	
Ammonia	mg/L	<MDL	<MDL	<MDL		<MDL	0.06	0.31			<MDL		
Oil & Grease	mg/L	<MDL	<MDL	<MDL		<MDL	4	5					
pH	su	8.0	8.0	8.0		7.0	7.9	8.8		8.06	8.73	7.91	
Phosphate	mg/L	<MDL	<MDL	<MDL		<MDL	0.02	0.10		0.025		0.012	
ResidueFilterable-TDS	mg/L	130	140	150		50	167	692		130	127	80	
ResidueNonFilterable-TSS	mg/L	<MDL	3	6		<MDL	20	141		5.7		51	
SAR		0.55	0.61	0.66		<MDL	0.65	2.42		0.49		0.239	
Sulfate	mg/L	10.0	15.0	20.0		<MDL	17.3	82.5		13.2	10.7	5.2	
Sulfide S	mg/L					<MDL	0.04	0.04			<MDL		
Aluminum (TREC)	mg/L	0.10	0.15	0.21		<MDL	0.36	1.32		0.133		<MDL	
Arsenic (TREC)	mg/L	<MDL	0.001	0.001		<MDL	0.0061	0.0500		<MDL	<MDL	<MDL	
Boron	mg/L					0.02	0.56	1.35			<MDL		
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.0029	0.0180		<MDL	<MDL	<MDL	
Calcium (TREC)	mg/L	24.6	24.8	25.0		6.9	27.3	132.0		28.1	26.7	132	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.011	0.198		<MDL	<MDL	<MDL	
Iron, Dissolved	mg/L	<MDL	<MDL	<MDL		<MDL	0.45	12.90		12.9	0.019	0.028	
Iron (TREC)	mg/L	0.14	0.21	0.27		<MDL	0.40	4.17		0.139	0.318	1.35	
Lead (TREC)	mg/L	<MDL	0.010	0.020		<MDL	0.0120	0.1500		<MDL	<MDL	<MDL	
Magnesium (TREC)	mg/L	5.30	5.50	5.70		2.00	6.25	18.80		5.54	5.38	2.28	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL		<MDL	0.186	2.900			0.0084		
Manganese (TREC)	mg/L	0.021	0.090	0.160		0.007	0.033	0.290		0.0159	0.0309	0.037	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.00007	0.00030		<MDL	<MDL	<MDL	
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.004	0.030		<MDL		<MDL	
Nickel	mg/L					<MDL	0.010	0.010			<MDL		
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.004	0.034		<MDL	<MDL	<MDL	
Silver	mg/L					<MDL	<MDL	<MDL			<MDL		
Sodium (TREC)	mg/L	11.5	12.2	12.9		3.0	16.2	91.5		10.1		3.6	
Zinc (TREC)	mg/L	0.02	0.02	0.03		<MDL	0.01	0.04		<MDL	<MDL	<MDL	

Field parameters, except flow, for the Lower North Fork of the Gunnison River are taken on the river approximately 1500' below the confluence of Terror Creek and the North Fork of the Gunnison. Flow data for the North Fork of the Gunnison river is obtained from USGS station #09132500.

*The Contractor who conducts the field monitoring forgot to take August sample for Surface List #2 Analysis, however a sample for Surface List #2 was collected in September.

NFG-low
North Fork - Drainage System
Elevation - 5680

Initiated	9/30/1996	9/30/1996	9/30/1996	9/30/1996
Activated	3/31/1997	3/31/1997	3/31/1997	3/31/1997
Date	12/30/2015	9/8/2015	6/9/2015	2/19/2015

Field Parameters	UNITS	Summary Information											
		Baseline				Operation							
		Min	Ave	Max		Min	Ave	Max					
Flow	CFS	99	292	610		53	487	2910		83	269	1660	66
Field Comment													
pH	su	8.1	8.4	8.7		7.6	8.3	9.1		8.5	8.8	8.1	9.0
Conductivity	umhos/cm	160	180	200		50	187	320		230	220	100	240
Temperature	Celsius	4.0	8.5	14.6		0.3	11.5	22.6		0.4	18.5	12.2	4.9
DO	mg/L					0.0	8.5	11.5		10.6	8.3	10	9.7
Lab Parameters	UNITS												
		Min	Ave	Max		Min	Ave	Max					
Bicarbonate	mg/L	95	100	105		28.1	83.9	138.7		106		43.9	
Chloride	mg/L	2.00	2.50	3.00		<MDL	31.08	288.30		3	2.2	0.61	
Chromium III CrIII	mg/L					<MDL	<MDL	<MDL			<MDL		
Chromium VI CrIV	mg/L					<MDL	<MDL	<MDL			<MDL		
Cyanide, Total	mg/L					<MDL	<MDL	<MDL			<MDL		
Conductivity	umhos/cm	201	222	242		85	224	754				85.3	
Hardness	mg/L	84	85	85		<MDL	87.20	270.40		93	88.8	42.3	
Nitrate	mg/L	<MDL	0.08	0.16		<MDL	0.38	3.90		0.1	<MDL	0.049	
Nitrate-Nitrite	mg/L	0.00	0.08	0.16		<MDL	<MDL	<MDL					
Nitrite	mg/L	<MDL	<MDL	<MDL		<MDL	0.002	0.010		<MDL	<MDL	<MDL	
Ammonia	mg/L	<MDL	<MDL	<MDL		<MDL	0.06	0.31			<MDL		
Oil & Grease	mg/L	<MDL	<MDL	<MDL		<MDL	4	5					
pH	su	8.0	8.0	8.0		7.0	7.9	8.8		8.06	8.73	7.91	
Phosphate	mg/L	<MDL	<MDL	<MDL		<MDL	0.02	0.10		0.025		0.012	
ResidueFilterable-TDS	mg/L	130	140	150		50	167	692		130	127	80	
ResidueNonFilterable-TSS	mg/L	<MDL	3	6		<MDL	20	141		5.7		51	
SAR		0.55	0.61	0.66		<MDL	0.65	2.42		0.49		0.239	
Sulfate	mg/L	10.0	15.0	20.0		<MDL	17.3	82.5		13.2	10.7	5.2	
Sulfide S	mg/L					<MDL	0.04	0.04			<MDL		
Aluminum (TREC)	mg/L	0.10	0.15	0.21		<MDL	0.36	1.32		0.133		<MDL	
Arsenic (TREC)	mg/L	<MDL	0.001	0.001		<MDL	0.0061	0.0500		<MDL	<MDL	<MDL	
Boron	mg/L					0.02	0.56	1.35			<MDL		
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.0029	0.0180		<MDL	<MDL	<MDL	
Calcium (TREC)	mg/L	24.6	24.8	25.0		6.9	27.3	132.0		28.1	26.7	132	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.011	0.198		<MDL	<MDL	<MDL	
Iron, Dissolved	mg/L	<MDL	<MDL	<MDL		<MDL	0.45	12.90		12.9	0.019	0.028	
Iron (TREC)	mg/L	0.14	0.21	0.27		<MDL	0.40	4.17		0.139	0.318	1.35	
Lead (TREC)	mg/L	<MDL	0.010	0.020		<MDL	0.0120	0.1500		<MDL	<MDL	<MDL	
Magnesium (TREC)	mg/L	5.30	5.50	5.70		2.00	6.25	18.80		5.54	5.38	2.28	
Manganese (Dissolved)	mg/L	<MDL	<MDL	<MDL		<MDL	0.186	2.900			0.0084		
Manganese (TREC)	mg/L	0.021	0.090	0.160		0.007	0.033	0.290		0.0159	0.0309	0.037	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.00007	0.00030		<MDL	<MDL	<MDL	
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.004	0.030		<MDL		<MDL	
Nickel	mg/L					<MDL	0.010	0.010			<MDL		
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL		<MDL	0.004	0.034		<MDL	<MDL	<MDL	
Silver	mg/L					<MDL	<MDL	<MDL			<MDL		
Sodium (TREC)	mg/L	11.5	12.2	12.9		3.0	16.2	91.5		10.1		3.6	
Zinc (TREC)	mg/L	0.02	0.02	0.03		<MDL	0.01	0.04		<MDL	<MDL	<MDL	

Field parameters, except flow, for the Lower North Fork of the Gunnison River are taken on the river approximately 1500' below the confluence of Terror Creek and the North Fork of the Gunnison. Flow data for the North Fork of the Gunnison river is obtained from USGS station #09132500.

*The Contractor who conducts the field monitoring forgot to take August sample for Surface List #2 Analysis, however a sample for Surface List #2 was collected in September.

Bowie Resources, LLC
Bowie No. 2 Mine
2015 Annual Hydrology Report

Surface Water

SW-05
Stevens Gulch - Downstream
Elevation - 6600

Initiated	1/1/1983	1/1/1983	1/1/1983	1/1/1983	1/1/1983	1/1/1983	1/1/1983	1/1/1983
Activated								
Date	11/19/2015	10/8/2015	9/10/2015	8/2/2015	6/15/2015	5/29/2015	4/29/2015	3/26/2015

Summary Information

Field Parameters	Summary Information															
	UNITS	Min	Ave	Max	Min	Ave	Max									
Flow	CFS	0.00	1.59	30.13					0.00000	0.00000	0.00885	0.11006	0.11006	0.14643	0.43360	0.22978
Water Level in Flume	Feet	0.00	0.08	1.06					0	0	0.01	0.05	0.05	0.06	0.12	0.08
Temperature	Celsius	-0.5	10.1	23.7					0	0	13.8	17.1	17.1	16	10.1	6.8
Conductivity	umhos/cm	0	556	2000					0	0	1060	490	520	670	430	570
pH	su	0.0	8.2	9.9					0	0	8.6	8.8	8.8	7.3	8.2	8.7
Field Comments									No Flow							
Lab Parameters	UNITS															
Bicarbonate	mg/L	66	225	456									246			
Chloride	mg/L	<MDL	21.91	223.41									8.6			
Conductivity	umhos/cm	149	604	1560									461			
Hardness	mg/L	35.6	257.9	625.7									210			
Nitrate-Nitrite	mg/L	<MDL	0.35	0.88									<MDL			
Oil and Grease	mg/L	<MDL	<MDL	<MDL									0			
pH	su	6.8	8.0	8.7									8.6			
Phosphate	mg/L	<MDL	0.22	0.47									0.045			
ResidueFilterable-TDS	mg/L	106	402	1130									332			
ResidueNonFilterable-TSS	mg/L	<MDL	36	438									12.7			
SAR		0.23	1.06	2.06									0.894			
Sulfate	mg/L	<MDL	102.5	450.0									39.5			
Aluminum (TREC)	mg/L	0.022	0.300	0.530									0.28			
Arsenic (TREC)	mg/L	0.001	0.020	0.040									<MDL			
Cadmium (TREC)	mg/L	0.002	0.007	0.010									<MDL			
Calcium (TREC)	mg/L	8.81	49.42	103.00									51.3			
Copper (TREC)	mg/L	0.002	0.008	0.020									<MDL			
Iron (TREC)	mg/L	0.03	0.25	0.54									0.354			
Lead (TREC)	mg/L	0.00	0.02	0.04									<MDL			
Magnesium (TREC)	mg/L	7.10	29.00	61.20									19.8			
Manganese (TREC)	mg/L	0.02	0.04	0.13									0.0196			
Mercury (TREC)	mg/L	0.00002	0.00011	0.00027									<MDL			
Molybdenum (TREC)	mg/L	0.002	0.006	0.015									<MDL			
Selenium (TREC)	mg/L	<MDL	0.007	0.018									<MDL			
Sodium (TREC)	mg/L	9.60	34.30	64.00									28.5			
Zinc (TREC)	mg/L	0.005	0.009	0.020									<MDL			

The area of concern for monitoring point SW-05 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

The contractor who conducts the field monitoring only took one sample during 2015.

Figure 93

The Stevens Gulch stream gauge, SW-05, is located near Bowie No. 1 mine's timber storage area in the NE1/4NW1/4, Sec 25, T13S, R92W,

SW-12
West Fork Terror Creek - Upstream
Elevation - 7920

Initiated	5/16/1983	5/16/1983	5/16/1983	5/16/1983
Activated				
Date	11/19/2015	9/23/2015	6/29/2015	5/4/2015

Field Parameters	UNITS	Summary Information			Operation						
		Baseline	Baseline	Baseline	Min	Ave	Max				
Flow	CFS	0.64	5.60	52.00				0.64	2.45	2.85	2.32
Water Level in Flume	Feet	0.190	0.655	2.000				0.3	0.725	0.8	0.7
Temperature	Celsius	0.1	6.4	14.9				1.1	9.2	11.8	8.6
Conductivity	umhos/cm	80	121	180				180	140	120	120
pH	su	7.7	8.3	8.9				8.9	7.7	8.6	7.9
Field Comments											
Lab Parameters	UNITS										
		Baseline	Baseline	Baseline	Min	Ave	Max				
Bicarbonate	mg/L	54.2	67.1	83.4				76.3		62.6	
Chloride	mg/L	0.53	0.64	0.90				0.69		<MDL	
Conductivity	umhos/cm	80.5	92.4	110.0				110			
Hardness	mg/L	44.5	51.5	61.9				58.3		47.6	
Acidity	mg/L	-64.0	-52.9	-38.1				-64		-52.5	
Nitrate-Nitrite	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Oil and Grease	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Phosphate	mg/L	<MDL	0.04	0.12				0.021		0.011	
ResidueFilterable-TDS	mg/L	78	90	108				93.0		100.0	
ResidueNonFilterable-TSS	mg/L	<MDL	21.8	37.0				<MDL		37	
SAR		0.174	0.255	0.342				0.282		0.245	
Sulfate	mg/L	2.2	2.6	3.1				3.1		2.6	
Aluminum (TREC)	mg/L	0.104	0.478	1.430				0.144		1.43	
Arsenic (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Cadmium (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Calcium (TREC)	mg/L	11.9	13.2	15.6				14.8		12.2	
Calcium (Dissolved)	mg/L	11.2	13.2	14.6				14.5		14.6	
Copper (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Iron (Dissolved)	mg/L	0.0300	0.0752	0.2400				0.0422		0.03	
Iron (TREC)	mg/L	0.112	0.420	1.360				0.152		1.36	
Lead (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Magnesium (TREC)	mg/L	3.53	4.52	5.58				5.18		4.15	
Magnesium (Dissolved)	mg/L	3.38	4.52	5.21				5.02		5.12	
Manganese (TREC)	mg/L	0.0067	0.0125	0.03				0.0067		0.0315	
Mercury (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Molybdenum (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Selenium (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	
Sodium (TREC)	mg/L	3.10	4.47	6.72				5.53		3.54	
Sodium (Dissolved)	mg/L	2.69	4.28	5.97				4.89		4.27	
Zinc (TREC)	mg/L	<MDL	<MDL	<MDL				<MDL		<MDL	

The area of concern for monitoring point SW-12 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

DH-39
Stevens Draw - Drill Hole
Pipe Elevation - 7142.65
Pipe 1.2' above ground
Depth - 181'

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated			
Date	8/6/2015	6/15/2015	3/29/2015

Field Parameters	UNITS	Summary Information			Operation					
		Baseline	Baseline	Baseline	Min	Ave	Max			
Static Water Level	Feet	64.55	71.87	192.55				71.89	70.32	72.86
Water Elevation	Feet	6950.1	7070.8	7078.1				7070.76	7072.33	7069.79
FieldComment										
ph	su	6.8	7.2	7.7				7.4	7.1	7.1
Conductivity	umhos/cm	1010	1262	1730				1310	1220	1220
Temperature	Celsius	8.1	10.3	14.3				10.4	11.1	11.1
Lab Parameters	UNITS									
Bicarbonate	mg/L	384.69	521.08	603.00					532	
Carbonate	mg/L	<MDL	0.77	10.83					<MDL	
Chloride	mg/L	1.36	16.26	47.14					14.7	
Conductivity	umhos/cm	1025	1365	3340					1230	
Hardness	mg/L	<MDL	423.56	771.50					407	
Nitrate-Nitrite	mg/L	<MDL	0.77	7.06					0.65	
Ammonia	mg/L	<MDL	0.24	0.81					0.05	
pH	su	7.0	7.5	8.5					7.4	
Phosphate	mg/L	<MDL	0.02	0.07					0.04	
ResidueFilterable-TDS	mg/L	443	903	2655					858	
Sulfate	mg/L	101.25	177.19	338.00					168	
Arsenic (Dissolved)	mg/L	<MDL	0.0104	0.1730					<MDL	
Cadmium (Dissolved)	mg/L	<MDL	0.007	0.035					<MDL	
Calcium (Dissolved)	mg/L	6.5	80.7	136.8					91.5	
Iron (Dissolved)	mg/L	<MDL	0.75	13.00					6.45	
Iron (TREC)	mg/L	0.01	12.61	43.70					0.0149	
Magnesium (Dissolved)	mg/L	<MDL	61.2	146.0					43.4	
Manganese (Dissolved)	mg/L	<MDL	1.628	60.100					1.71	
Manganese (TREC)	mg/L	0.026	0.400	2.470					0.0284	
Mercury (Dissolved)	mg/L	<MDL	0.000264	0.00550					<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.006	0.021					<MDL	
Sodium (Dissolved)	mg/L	95.8	164.3	380.5					158	
Zinc (Dissolved)	mg/L	<MDL	0.01	0.10					<MDL	

The area of concern for monitoring point DH-39 has not been affected by the mining operation. Therefore, all recorded monitoring events are considered Baseline.

Drill Hole 39 is located in Stevens Draw right next to Drill Hole 15. It is accessed by the Stevens Draw road.

Note: Contractor hired to perform field monitoring only collected one sample and three quarters of field parameters during 2015.

DH-49
B Gulch - Drill Hole
Pipe Elevation - 7203.4
Pipe 0.7' above ground
Depth - 324'

Initiated	6/12/1995	6/12/1995	6/12/1995
Activated	3/30/1997	3/30/1997	3/30/1997
Date	8/6/2015	6/15/2015	3/29/2015

Summary Information

Field Parameters	UNITS	Baseline			Operation					
		Min	Ave	Max	Min	Ave	Max			
Static Water Level	Feet	100.84	145.8	189.79	99.57	234.4252	311.46	284.36	280.1	311.46
Water Elevation	Feet	7013.6	7057.6	7102.6	6891.9	6969.0	7103.8	6919.04	6923.3	6891.94
FieldComment										
ph	su	7.1	7.3	7.5	6.9	7.4	8.2	7.5	7.5	7.3
Conductivity	umhos/cm	1220	2028	3300	1140	3813	4600	4300	4300	4400
Temperature	Celsius	10	11.9	13.5	10.8	13.4	15.8	14.3	14.9	14.7
Lab Parameters	UNITS									
Bicarbonate	mg/L	496	834	1090	313.4	1333.338	1860		1650	
Carbonate	mg/L	<MDL	<MDL	<MDL	<MDL	9.66	79.46		<MDL	
Chloride	mg/L	14	15	16	<MDL	43.7	344.61		17.2	
Conductivity	umhos/cm	1250	2023	2470	1160	3546.739	5920		4100	
Hardness	mg/L	34	300	491	<MDL	192	463		180	
Nitrate-Nitrite	mg/L	0.63	1.0	1.43	0.028	3.86	8.9		7.8	
Ammonia	mg/L	0.14	1.9	3.8	<MDL	1.31	5		<MDL	
pH	su	7.1	7.4	7.7	7.2	7.7	8.7		7.71	
Phosphate	mg/L	<MDL	<MDL	<MDL	<MDL	0.11	0.72		0.72	
ResidueFilterable (TDS)	mg/L	790	1347	1790	700	2552	3411		3060	
Sulfate	mg/L	216	362	470	180	609.03	828		733	
Arsenic (Dissolved)	mg/L	<MDL	0.001	0.002	<MDL	0.047	0.560		<MDL	
Cadmium (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.011	0.040		<MDL	
Calcium (Dissolved)	mg/L	11	62	100	0.55	35.1	98.4		29.4	
Iron (Dissolved)	mg/L	0.05	0.4	1.1	<MDL	0.156	1.12			
Iron (TREC)	mg/L	0.2	12.4	29.4	0.0186	3.78	17.8		0.0186	
Magnesium (Dissolved)	mg/L	1.6	35.1	58.6	18.7	32.4	71.5		25.8	
Manganese (Dissolved)	mg/L	<MDL	0.038	0.105	<MDL	0.070	0.35			
Manganese (TREC)	mg/L	0.007	0.19	0.308	<MDL	0.69	7.32		<MDL	
Mercury (Dissolved)	mg/L	<MDL	<MDL	<MDL	<MDL	0.00008	0.00050		<MDL	
Selenium (Dissolved)	mg/L	<MDL	0.003	0.007	<MDL	0.037385	0.283		<MDL	
Sodium (Dissolved)	mg/L	5.2	230.7	556	109	870	2070		1050	
Zinc (Dissolved)	mg/L	<MDL	0.003	0.01	<MDL	0.016	0.04		<MDL	

Note: Contractor hired to perform field monitoring only collected one sample and three quarters of field parameters during 2015.

Drill Hole 49 is located just above Stevens Draw road approximately 1000 feet southwest of the mine portals. It is accessed by the Stevens Draw road.