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# J. E. STOVER & ASSOCIATES, INC.

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MINE ENGINEERING  
MINE RECLAMATION

CIVIL ENGINEERING  
CONST. MANAGEMENT

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January 27, 2022

Rob Zuber  
Division of Reclamation, Mining and Safety  
1313 Sherman Street, Room 215  
Denver, CO 80203

Re: 2020 Annual Hydrology Report  
Adequacy Review #1  
Bowie Resources, LLC, Bowie No. 2 Mine  
Permit No. C-1996-083

Dear Mr. Zuber:

On behalf of Bowie Resources, LLC, below are the responses to DRMS' adequacy review letter dated December 14, 2021;

1. **DRMS:** Please explain why field data was collected for SW-05 on March 5, 2020, but no laboratory analysis was performed for the site. Also, please explain why field data was collected for SW-06 on December 3, 2020, but not laboratory analysis was performed.

**BRL:** Laboratory analysis was not performed for SW-05 on March 5, 2020 because the flow was less than 5 GPM. Please see revised **Figure 16** (SW-05) that notes there was not enough flow.

Laboratory analysis was not performed for SW-06 on December 3, 2020 because the flow was less than 5 GPM. A flow of 0.25 GPM was provided in the field notes and then listed on Figure 18. The flow should have been converted to CFS and it was not. Therefore, the flow of .001 cfs was much too low to have enough water to obtain a sample for laboratory analysis. Please see revised **Figure 18**.

2. **BRL:** Springs 14-4 and 30's location has been updated to reflect the current location of East RoatCap Creek Drainage.

Please let me know if you need additional information.

Sincerely,

*Tamme Bishop*

Tamme Bishop, P.E.  
Project Engineer

SW05  
Steven's Gulch  
Elevation - 6600

Initiated	1/1/1983	1/1/1983	1/1/1983	1/1/1983
Activated	12/21/1986	12/21/1986	12/21/1986	12/21/1986
Date	12/3/2020	9/2/2020	6/10/2020	3/5/2020

Summary Information											
Field Parameters	UNITS	Baseline			Operation						
		Min	Ave	Max	Min	Ave	Max				
Flow	CFS	0	3.1	16.9	0.00	1.32	30.13				0.01
Water Level in Flume	Feet				0.00	0.08	1.06				0.01
Temperature	Celsius	-0.5	10.8	23.7	0.0	10.4	23.6				22
Conductivity	umhos/cm	170	746	1605	40	525	2000				613
pH	su	7.3	8.5	9.9	6.9	8.3	9.0				8.26
Field Comments								Dry	Dry	Dry	**
Lab Parameters	UNITS										
Bicarbonate	mg/L	89	302	456	83	202	456				
Carbonate	mg/L	<MDL	1	7	<MDL	4.13	12.65				
Chloride	mg/L	2	16	31	<MDL	13.77	43.00				
Conductivity	umhos/cm	170	734	1290	149	550	1560				
Hardness	mg/L	72	312	534	35.6	226.2	625.7				
Acidity	mg/L				-330.0	-68.0	24.0				
pH	su	6.8	8.1	8.7	7.2	8.1	8.6				
ResidueFilterable-TDS	mg/L	120	488	794	19	375	1130				
ResidueNonFilterable-TSS	mg/L	2	77	438	<MDL	31	408				
SAR		0.56	1.14	1.60	0.23	1.06	2.06				
Sulfate	mg/L	14	131.5	338.0	<MDL	96.74	450.00				
Calcium (Dissolved)	mg/L	19	71.8	110.0	6.8	50.9	132.0				
Iron (Dissolved)	mg/L	6	32.1	66.0	<MDL	0.09	0.61				
Iron (Total)	mg/L	11.00	47.82	85.00	0.02	0.41	1.46				
Magnesium (Dissolved)	mg/L	6.0	32.1	66.0	4.5	25.7	86.2				
Sodium (Dissolved)	mg/L	11.0	47.8	85.0	0.0	40.0	115.0				
Manganese (Total)	mg/L				<MDL	2.27	35.60				

The Stevens Gulch stream gauge, SW05, is located near Bowie No. 1 mine's timber storage area in the NE1/4NW1/4, Sec 25, T13S, R92W, of the 6 was installed at this location.

\* Flow not measurable

\*\* Flow less than 5 gpm

SW06  
East Roatcap Creek - Downstream  
Elevation - 6740

Initiated	1/1/1983	1/1/1983	1/1/1983
Activated	12/21/1986	12/21/1986	12/21/1986
Date	12/3/2020	9/2/2020	6/10/2020

Summary Information									
Field Parameters	UNITS	Baseline			Operation				
		Min	Ave	Max	Min	Ave	Max		
Flow	CFS	0.00	4.65	45.75	0.00	1.26	19.20	0.001	
Water Level in Flume	Feet				0.00	0.20	1.22		
Temperature	Celsius	0.5	10.0	21.1	0.03	9.43	25.50	0.2	9.4
Conductivity	umhos/cm	60	277	691	80	586	1650	910	382
pH	su	6.5	8.3	9.2	6.9	8.3	9.0	8	8.07
Field Comments								**	No flow listed
Lab Parameters	UNITS								
Bicarbonate	mg/L	60	155	289	58	234	440		176
Carbonate	mg/L	<MDL	1	7.1	<MDL	8.58	52.00		6
Chloride	mg/L	1	5	10	<MDL	13.72	68.00		3
Conductivity	umhos/cm	110	275	670	89.9	593.4	1430.0		348
Hardness	mg/L	58	158	291	44.90	272.54	697.00		153
Acidity	mg/L				-370	-115	62		
pH	su	6.8	7.9	8.4	6.50	8.07	8.60		8.4
ResidueFilterable-TDS	mg/L	40	180	380	50	411	1130		228
ResidueNonFilterable-TSS	mg/L	18	104	524	<MDL	22	138		8
SAR		0.11	0.46	0.72	0.28	0.96	5.93		0.52
Sulfate	mg/L	10	32	80	2.20	85.20	410.00		15.6
Calcium (Dissolved)	mg/L	15	37	69	10.5	56.1	125.0		69.5
Iron (Dissolved)	mg/L				<MDL	0.12	0.83		<MDL
Iron (Total)	mg/L				0.07	0.70	2.78		<MDL
Magnesium (Dissolved)	mg/L	4	14	29	4.0	33.2	99.2		52.4
Manganese (Total)	mg/L				<MDL	0.059	0.165		0.03
Sodium (Dissolved)	mg/L	2	14	28	5.00	38.06	155.00		58.6

SW06 is located on East Roatcap Creek in the NE1/4SW1/4 Sec 23, T13S, R92W of the 6th P.M. A 36" Parshall flume was also installed.

\* Sample taken on 3/28/16

\*\* Flow less than 5 gpm