
J. E. STOVER & ASSOCIATES, INC.

2352 NORTH 7TH STREET, UNIT B
GRAND JUNCTION, COLORADO 81501
PHONE: (970) 245-4101, FAX: (970) 242-7908

MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

January 4, 2019

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

Re: Bowie Resources, LLC, Bowie No. 1 Mine
TR-65, Reduce Hydrologic Monitoring
Adequacy Review
Permit C-1981-038

Dear Ms. Binns:

DRMS' letter dated January 2, 2019 transmitted its adequacy review for the referenced technical revision. On behalf of Bowie Resources, LLC, (BRL), following are its responses to the DRMS' comments and concerns.

1. DRMS - Rather than sample in "second or fourth quarter," the Division requests BRL sample in second quarter, particularly for surface water. The Division believes that there will be more value in collecting the water quality data during higher periods of runoff when loading to the river could be significant. There is the likelihood that during fourth quarter sampling events there will be inadequate flow at some sampling points. The Division prefers that BRL will be able to collect a sample, as opposed to a "no discharge" value.

BRL – Added note 3 to tables 1 and 4B indicating annual full-suite to be obtained during second quarter.

2. DRMS - Please revise the Hydrologic Monitoring Plan to include the commitment, "At least one year before any Phase III bond release applications are submitted, BRL will resume water quality full-suite sampling at least semi-annually." Resumption of more frequent sampling should provide enough hydrology information for DRMS to evaluate and make findings related to the bond release.

BRL – Added note 4 to tables 1 and 4B indicating at least one year before any Phase III bond release applications are submitted, BRL will resume water quality full-suite sampling at least semi-annually.

Please let me know if you have any questions.

Sincerely,

J. E. Stover

J. E. Stover, P.E.
Consulting Engineer

Attachments:

Volume 4, Table 1 and Table 4B

Cc: Basil Bear

TABLE 1

BOWIE NO. 1 MINE

SURFACE WATER MONITORING - STREAMS

STATION NO.	PRESENTLY MONITORED?	PERMIT ACTION	REQUIRED MONITORING FREQUENCY			MONITORED DRAINAGE BASIN	WATERSHED AREA	STREAM GAUGE TYPE	FLUME SIZE	INSTALLATION DATE	NOTES
			FLOW (cfs)	FIELD PARAMETERS	WATER QUALITY						
SW - 1	NO	NONE	--	--	--	WEST FORK TERROR CREEK	18.44 sq.ml.	Stilling well and recorder	--	Sep-82	Data recorder activated is 09/27/82. Well and recorder attached to existing culvert.
SW - 2	NO	NONE	--	--	--	EAST FORK TERROR CREEK	5.94 sq.ml.	Parshall flume and recorder	4' x 30"	Sep-82	
SW - 4	NO	NONE	--	--	--	TRIBUTARY TO WEST FORK TERROR CREEK	1.0 sq.ml.	Crest stage gauge	--	Sep-82	
SW - 5	YES	NONE	Quarterly	Quarterly	Annually	STEVENS GULCH	4.01 sq.ml.	Parshall flume and recorder	3' x 30"	Sep-82	
SW - 6	YES	NONE	Quarterly	Quarterly	Annually	EAST ROATCAP CREEK - DOWNSTREAM	3.59 sq.ml.	Parshall flume and recorder	3' x 30"	Sep-82	
SW - 7	NO	NONE	--	--	--	TRIBUTARY TO FIRE MOUNTAIN CANAL	0.72 sq.ml.	Crest stage gauge	--	Sep-82	
SW - 8	NO	NONE	--	--	--	COAL GULCH	0.80 sq.ml.	Crest stage gauge	--	Sep-82	
SW - 9	NO	NONE	--	--	--	WEST ROATCAP CREEK - UPSTREAM	--	Parshall flume and recorder	1' x 30"	Nov-88	Relocated to West Roatcap. Located in East Roatcap 07/83 trough 1986.
SW - 10	NO	NONE	Quarterly	Quarterly	Quarterly	TERROR DITCH	--	Parshall flume and recorder	2.5' x 30"	Jul-83	
SW - 11	NO	NONE	--	--	--	MAIN ROATCAP CREEK	?	Concrete weir and recorder	--	Jun-83	Stilling well and recorder attached to weir
SW - 12	NO	NONE	--	--	--	ROBERTS/STUCKER DITCH	--	Parshall flume and recorder	2' x 30"	Jun-83	
UERC	NO	NONE	--	--	--	EAST ROATCAP - ABOVE WEST MINE	?	Grab sample point	--	Nov-86	Sampling initiated during West Mine construction for TSS, TDS.
LERC	NO	NONE	--	--	--	EAST ROATCAP - ABOVE WEST MINE	?	Grab sample point	--	Nov-86	Sampling initiated during West Mine construction for TSS, TDS.

- NOTES:**
- 1) First quarter and monthly monitoring shall be initiated when sites are accessible. Second quarter and monthly monitoring shall be initiated by no later than May 15 of each year unless the Division is consulted
 - 2) **SW-1** Transferred to the Bowie No. 2 Mine Permit
 - 3) Annual full-suite to be obtained during second quarter.
 - 4) At least one year before any Phase III bond release applications are submitted, BRL will resume water quality full-suite sampling at least semi-annually.

TABLE 4B

BOWIE NO. 1 MINE

GROUND WATER MONITORING - WELLS

STATION NO.	PRESENTLY MONITORED?	PERMIT ACTION	REQUIRED MONITORING FREQUENCY			LOCATION	MONITORED STRATA	TOTAL DEPTH (FT)	CASING	CASING DEPTH (FT)	SCREENED INTERVAL (FT)	GROUND ELEV. (FT)	DEPTH TO WATER	WATER ELEV.	INSTALL DATE
			WATER LEVEL	FIELD PARAMETERS	WATER QUALITY										
SG-1	NO	NONE	--	--	--	Stevens Gulch Well Field	Colluvium/Alluvium	92.0	8 5/8" Steel	87.0	69-87(7")	7560.00	2' - 10'	7558 - 7550	3/1/1977
SG-A	NO	NONE	--	--	--	Stevens Gulch Well Field	Colluvium/Alluvium	90.0	8 5/8" Steel	90.0	70 - 90	7560.00	2' - 10'	7558 - 7550	3/1/1977
SG-B	NO	NONE	--	--	--	Stevens Gulch Well Field	Colluvium/Alluvium	65.0	8 5/8" Steel	65.0	50 - 65	7560.00	2' - 10'	7558 - 7550	3/1/1977
SG-C	NO	NONE	--	--	--	Stevens Gulch Well Field	Colluvium/Alluvium	27.0	8 5/8" Steel	27.0	17 - 27	7560.00	2' - 10'	7558 - 7550	3/1/1977
SG-2	NO	NONE	--	--	--	Stevens Gulch Well Field	Colluvium/Alluvium	91.0	8" Steel	88.0	63 -73; 78 - 88	7560.00	2' - 10'	7558 - 7550	2/1/1978
DH-47	NO	NONE	--	--	--	SE1/4, SE1/4, Sec. 12, T.13S., R.92W.	SS in barren member of Mesaverde	225.0	6" PVC	225.0	160 - 225	8296.00	128.80	8187.4	3/1/1979
GR77-7	NO	NONE	--	--	--	NW 1/4, SW 1/4, Sec. 14, T.13S., R.92W.	SS in barren member of Mesaverde	509.0	4" PVC	500.0	140 - 240; 440 - 480	7466.00	114.00	7352	9/1/1977
DH-58	NO	NONE	--	--	--	SE1/4, NW1/4, Sec. 18, T.13S., R.91W.	Coal member of Mesaverde	1963.0	4" Steel; 2"PVC	0-1580;1574-1914	See Table 4A	8562.00	1689.00	6873	6/1/1982
DH-60	NO	NONE	--	--	--	NE1/4, NE1/4, Sec. 14, T.13S., R.92W.	Coal member of Mesaverde	1350.0	4" Steel; 2"PVC	0-1055;1045-1345	See Table 4A	7928.00	1031.00	6897	6/1/1982
DH-62	NO	NONE	--	--	--	NW 1/4, SW 1/4, Sec. 7, T.13S., R.91W.	Coal member of Mesaverde	1945.0	4" Steel	1623.0	--	8377.00	1817.00	6560	7/1/1982
DH-65	NO	NONE	--	--	--	NW 1/4, NE1/4, Sec. 15, T.13S., R.92W.	Coal member of Mesaverde	1655.0	4" Steel; 2"PVC	0-1280;1270-1650	See Table 4A	8306.00	1044.00	7262	7/1/1982
DH-68	NO	NONE	--	--	--	SE1/4, NW1/4, Sec. 15, T.13S., R.92W.	Coal member of Mesaverde	1475.0	4" Steel; 2"PVC	0-1060;1050-1470	See Table 4A	8192.00	1060.00	7132	7/1/1982
DH-70	NO	NONE	--	--	--	NW 1/4, SW 1/4, Sec. 17, T.13S., R.91W.	Coal member of Mesaverde	695.0	4" Steel; 2"PVC	0-240;232-695	See Table 4A	7387.00	534.00	6853	6/1/1982
DH-69	NO	NONE	--	--	--	NE1/4, NW1/4, Sec. 7, T.13S., R.91W.	Coal member of Mesaverde	1975.0	4" Steel; 2"PVC	0-1720;1710-1970	See Table 4A	8312.00	1768.00	6544	7/1/1982
B-1	NO	NONE	--	--	--	Bowie No. 1 East Mine - Fan Level	Colluvial soils	48.5	1" PVC	--	--	7459.30	Dry	Dry	10/22/1981
B-2	NO	NONE	--	--	--	Bowie No. 1 East Mine - Fan Level	Colluvial soils - Fan Level Fill	54.0	1" PVC	--	--	7415.03	Dry	Dry	10/22/1981
B-3	NO	NONE	--	--	--	Bowie No. 1 East Mine - C & S Level	Colluvial soils - C & S Level Fill	89.0	2" PVC	89.0	77.0 - 89.0	8948.76	83.00	6863.76	10/19/1981
B-4	NO	REMOVE	--	--	--	Bowie No. 1 East Mine - Below C & S	Colluvial soils - Below C & S Fill	59.5	1" PVC	58.9	47.4 - 58.9	6832.39	44.00	6786.39	10/23/1981
B-5	NO	NONE	Semi-Ann	--	--	Bowie No. 1 East Mine - Below C & S	Colluvial soils - Below C & S Fill	35.5	2 1/2"PVC	29.4	23.9 - 28.9	8832.39	Dry	Dry	10/26/1981
B-6	NO	NONE	Semi-Ann	--	--	Bowie No. 1 East Mine - Old Waste Pile	Colluvial soils - Above old waste pile	99.0	2 1/2"PVC	92.5	85.5 - 90.5	8778.01	Dry	Dry	10/26/1981
B-7	YES	NONE	Semi-Ann	Semi-Ann	Annually	Bowie No. 1 East Mine - Below Pond #4	Colluvial soils - Below sed. Pond #4	99.0	2" PVC	98.0	86.0 - 96.0	8602.00	82.00	6520	10/26/1981
B-8	NO	NONE	Semi-Ann	--	--	Bowie No. 1 East Mine	Colluvial soils - Below WRWP Sed Pond	38.7	2" PVC	38.7	?	6790.00	Dry	Dry	1982
SM-1	NO	NONE	Semi-Ann	Semi-Ann	Annually	NE1/4, SW1/4, NW1/4 Sec. 13, T.13S., R.92W.	Shallow Colluvium	55.0	2" PVC	55.0	37.5 - 52.0	7590.00	6.10	7586.6	7/29/1985
SM-2	NO	NONE	--	--	--	NE1/4, SW1/4, NW1/4 Sec. 12, T.13S., R.92W.	Shallow Colluvium	30.0	2" PVC	30.0	14.5 - 24.5	7650.00	10.75	7641.75	7/29/1985
SM-3	NO	NONE	--	--	--	NE1/4, SW1/4, NE1/4 Sec. 13, T.13S., R.92W.	Shallow Colluvium	63.0	2" PVC	63.0	37.5 - 57.5	7990.00	4.50	7988	7/31/1985
SM-4	NO	NONE	--	--	--	NE1/4, SW1/4, SW1/4 Sec. 8, T.13S., R.91W.	Shallow Colluvium	65.0	2" PVC	65.0	46.5 - 60.0	7500.00	26.70	7475.8	8/1/1985
SM-5	NO	NONE	Semi-Ann	Semi-Ann	Annually	SW 1/4, NW 1/4, SW 1/4 Sec. 14, T.13S., R.92W.	Shallow Colluvium	40.0	2" PVC	40.0	20.0 - 35.0	7520.00	16.75	7505.55	7/30/1985
SM-6	NO	NONE	Semi-Ann	Semi-Ann	Annually	SE1/4, NW1/4, SW1/4 Sec. 14, T.13S., R.92W.	Shallow Colluvium	50.0	2" PVC	50.0	24.0 - 44.0	7480.00	14.70	7467.8	7/30/1985
SM-7	NO	NONE	Semi-Ann	Semi-Ann	Annually	SW 1/4, SW 1/4, NE1/4 Sec. 14, T.13S., R.92W.	Shallow Colluvium	55.0	2" PVC	55.0	28.0 - 46.0	7800.00	22.10	7780.4	7/30/1985
SM-8	NO	NONE	--	--	--	SE1/4, NW1/4, NW1/4 Sec. 7, T.13S., R.91W.	Shallow Colluvium	45.0	2" PVC	45.0	24.5 - 39.5	8250.00	25.30	8234.8	7/31/1985
SM-9	NO	NONE	Semi-Ann	Semi-Ann	Annually	NW 1/4, NW 1/4, SW 1/4 Sec. 14, T.13S., R.92W.	Shallow Colluvium	40.0	2" PVC	40.0	20.0 - 35.0	7520.00	25.30	7497.2	7/29/1985
SM-10	NO	NONE	Semi-Ann	Semi-Ann	Annually	NW 1/4, NE1/4, NW 1/4 Sec. 23, T.13S., R.92W.	Shallow Colluvium	48.7	2" PVC	48.7	?	7249.07	43.00	7207.47	1986
SM-11	NO	NONE	Semi-Ann	Semi-Ann	Annually	NE1/4, NE1/4, NW1/4 Sec. 23, T.13S., R.92W.	Shallow Colluvium	46.5	2" PVC	46.5	?	7241.15	37.00	7205.6	1986
OVWM	NO	NONE	--	--	--	Bowie No. 1 West Mine South Fill Slope - Terrace	Colluvial Fill (58') Shallow Colluvium (18')	76.0	2" PVC	72.5	37.5 - 72.5	7120.00	61.10	7058.9	12/12/1986

- NOTES:**
- 1) First Quarter and monthly monitoring shall be initiated when sites are accessible. Second quarter and monthly monitoring shall be initiated by no later than May 15 of each year unless the Division is consulted.
 - 2) **DH-69** Transferred to the Bowie No. 2 Mine Permit
 - 3) Annual full-suite to be obtained during second quarter.
 - 4) At least one year before any Phase III bond release applications are submitted, BRL will resume water quality full-suite sampling at least semi-annually.