J. E. STOVER & ASSOCIATES, INC.

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MINE ENGINEERING
MINE RECLAMATION

CIVIL ENGINEERING
CONST. MANAGEMENT

October 13, 2021

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

Re: Bowie Resources, LLC, Bowie No. 2 Mine
MR-206, Temporary Ditch/Culvert T-F1 revision
Permit C-1996-083

Dear Mr. Zuber:

On behalf of Bowie Resources, LLC, (BRL), enclosed is an application for a minor revision to reflect maintenance changes made to Temporary Culvert T-F1. Temporary Culvert T-F1 was removed and a rip-rap lined channel was installed in its place (Temporary Ditch T-F1).

Attached are revised pages App B-2 & 102i. Appendix B was revised to show the correct flow for Temporary culvert/ditch T-F1 which is determined by SedCad and showon on page App. B-103iii.

Please let me know if you have any additional questions.

Sincerely,

Tamme Bishop

Tamme Bishop, P.E.
Project Engineer

Cc: Basil Bear

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567

APPLICATION FORM FOR A REVISION TO A COAL MINING AND RECLAMATION PERMIT

This form must be completed and submitted with all requests for minor revisions, as defined in Rule 1.04(73), technical revisions, as defined in Rule 1.04(136), and permit revisions, as defined in Rule 1.04(90). All revisions are to address the requirements of Rule 2.08.4. Three (3) copies of the revision, including maps, must be submitted in order for it to be complete.

All revisions are to be formatted so they can be inserted into the permit to replace the revised sections, maps, tables and/or figures, with a revised table of contents, if necessary. The revision submittal date should be printed in the lower right corner of each revision page. A cover letter to the revision should explain the nature of the revision and reference the specific permit sections being revised.

For federal mines, a copy of the revision application must be submitted to all agencies on the federal mailing list (except OSM) at the same time the application is submitted to the Division, and proof of distribution must be submitted to the Division along with the application. Copies of revision pages modified during the review process must be distributed in the same manner, along with proof of distribution. Proof of distribution must be submitted prior to implementation of the revision.

Permit No.: C - 1996 - 083 Date: 10 / 13 / 2021

Permittee: Bowie Resources, LLC

Bowie No. 2 Mine

Street: P.O. Box 1488

City: Paonia

State: CO Zip Code: 81428 -

Brief Description of Revision: Add design for temporary ditch T-F1 as an alternative design to temporary culvert T-F1.

Public Notice Attached: Yes __ No ✓ *(Required for PRs and TRs)*

Bond Increase: Yes __ No ✓ **Federal** ✓ **Non-Federal** __ **Mine**

Proposed Change in:

Permit Area -

Disturbed	(+/-) __ __ 0 . 0	Acres
Permit	(+/-) __ __ 0 . 0	Acres
Affected	(+/-) __ __ 0 . 0	Acres

Surface Ownership -

Private Land	(+/-) __ __ 0 . 0	Acres
Federal Land	(+/-) __ __ 0 . 0	Acres
State Land	(+/-) __ __ 0 . 0	Acres

Mineral Ownership -

Mineral Private	(+/-) __ __ 0 . 0	Acres
Mineral Federal	(+/-) __ __ 0 . 0	Acres
Mineral State	(+/-) __ __ 0 . 0	Acres

Appendix B

Summary Coal Mine Waste Disposal Area Ditches and Culverts

		Ditch Grade		Minimum Grade		Maximum Grade		RipRap	Peak
		Min	Max	Depth	Velocity	Depth	Velocity	D_{50} Inch*	Flow
				Feet	Ft/Sec	Feet	Ft/Sec		cfs
	F1	4.2%	4.2%	0.40	4.2	0.40	4.2		6.18
	F2	1.3%	1.3%	0.47	2.6	0.47	2.6		5.17
	F3	4.4%	4.4%	0.45	4.6	0.45	4.6		8.62
	F4	30.0%	30.0%	1.60	11.5	1.60	11.5	24	44.01
	F5	2.0%	2.0%	0.38	2.8	0.38	2.8		3.50
	F6	1.1%	1.1%	0.40	2.1	0.40	2.1		3.93
	F7	2.0%	2.0%		Trapezoidal Channel			12	19.08
	F7a	33.0%	33.0%	0.90	11.7	0.90	11.7	24	19.08
	F8	4.6%	4.6%	0.50	4.9	0.50	4.9		10.01
	F9	30.0%	30.0%	0.10	6.2	0.10	6.2	12	1.40
	F10	2.2%	2.2%	0.54	3.7	0.54	3.7		9.63
	F11	3.4%	3.4%	0.33	3.3	0.33	3.3		3.19
	F12	3.6%	3.6%	0.39	3.8	0.39	3.8		5.03
	F13	2.0%	2.0%	0.80	4.1	0.80	4.1		3.93
	F14 (2%)	2.0%	2.0%		Trapezoidal Channel				11.22
	F14 (30%)	26.0%	26.0%		Trapezoidal Channel			18	11.22
	F15	1.8%	1.8%	0.48	2.7	0.48	2.74		0.96
	F16	10.0%	10.0%	1.30	8.0	1.30	7.98	18	3.05
	F17	1.0%	1.0%	0.68	2.6	0.68	2.6		2.14
	F18	3.4%	3.4%	0.56	2.3	0.56	2.3		1.08
	F19	2.9%	2.9%	0.39	2.6	0.39	2.6		0.60
	F20	7.0%	7.0%	0.28	4.2	0.28	4.2		3.48
	East Div.	5.0%	30.0%		Trapezoidal Channel			0-24"	26.00
	W. Div #2	4.0%	4.0%	0.40	2.6	0.40	2.6		3.52
	W. Div #1	3.5%	3.5%	0.81	4.3	0.81	4.3		10.64
Permanent Culvert:									
F2	30"								15.14
F4	*Deleted From Design with TR-87, will remain in place until Pond D expansion is complete.*								
Temporary Culvert/Ditch:									
T-F1	30" Half Culvert or D_{50} rip rap = 21"								7.12
T-F2	12"								0.47
T-F3	24"								21.41
T-F4	30" Half Culvert								4.74
T-F5	30" Half Culvert								5.82
* Minimum D_{50}									
Flow depth in feet does not include freeboard.									

Ditch T-F1, alternative to Culvert T-F1

Material: Riprap

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
1.00	1.5:1	1.5:1	33.0	1.00		

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	7.12 cfs	
Depth:	0.10 ft	1.10 ft
Top Width:	1.29 ft	4.29 ft
Velocity*:		
X-Section Area:	0.11 sq ft	
Hydraulic Radius:	0.082 ft	
Froude Number*:		
Manning's n*:		
Dmin:	7.00 in	
D50:	21.00 in	
Dmax:	26.25 in	

Velocity and Manning's n calculations may not apply for this method.