



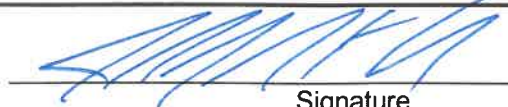
COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF MINING PROGRAMS

**MINE 78 SURFACE NO. 3 MINE**

**CONVENTIONAL BONDING FOR LAND RECLAMATION - COAL  
BOND CALCULATION SUMMARY**

Permittee: Rosebud Mining Company Permit No.: Pending  
Municipality: Paint Township County: Somerset

Operation	Cost
Backfilling	\$108,890
Topsoil	\$36,139
Revegetation	\$41,800
Trees	\$21,120
Select Grading	\$1,700
Ponds	\$7,600
Mobilization/Demobilization	\$8,330
Temp E & S	\$
Demolition	\$
Sealing	\$
Stage 3 Maintenance	\$
Other Items	\$
	\$
	\$
<b>Total Reclamation Cost</b>	<b>\$216,579</b>
<b>Total with inflation</b>	<b>\$225,203</b>
If bond is recalculated at Renewal use: Subtotal Site Bond = (Direct Costs + Indirect Costs) * (1+E) <sup>5</sup> If bond is recalculated at Mid-Term use: Subtotal Site Bond = (Direct Costs + Indirect Costs) * (1+E) <sup>3</sup>	
Post Mining Discharge	\$

  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ \_\_\_\_\_  
 Title 08/19/2021  
Date



**BOND CALCULATION WORKSHEET**  
**Mine 78 Surface No. 3 Mine Initial Bond**

Date: 08/2021

**SECTION A. APPLICANT INFORMATION**

**Applicant Name:** Rosebud Mining Company  
**Mine Name:** Mine 78 Surface No. 3 Mine  
**Permit No:** Pending  
**Application Contact:**

St. Clair  
 Last Name

John  
 First Name

J.  
 MI

Manager of Permitting  
 Title

**SECTION B. GRADING**

**B1.) BACKFILLING**

Provide the calculations for the volume of the void created by the entire mining operation in the spaces below.

Portal		Cubic Yards	2021 Unit Cost	Required Bond Amount
Pit 1 (< 500')		0	\$0.80	\$0
Pit 1 (> 500')		38,889	\$1.40	\$54,445
Pit 2 (< 500')		0	\$0.80	\$0
Pit 2 (> 500')		38,889	\$1.40	\$54,445
<b>Total bond amount for backfilling:</b>				<b>\$108,890</b>

Notes:

- When calculating the bond amount for backfilling, estimate the volume of the void created by the entire mining operation, i.e. the maximum volume of open pit(s), (accounting for ramps, roads, benches, shot benches, the upgrade slope of the low wall side), as well as all areas needed for support activities. A 28 degree angle of repose should be used when calculating the volumes. If additional space is needed attached calculations to this form and label B.1 Backfilling.
- If mining multiple seams, calculate the volume by benches. Use higher unit cost if spoil is located 500 ft or more from any pit. If spoil is located more than 1,000 ft. from any pit, the grading rate cost may be set from a standard reference such as the *Means Building Construction Cost Data*
- Use separate calculations for additional pits.
- If using other methods to determine volumes, attach calculations.

**B2.) TOPSOIL HANDLING**

Site	Acres	Soil Thickness (ft.)	Cubic Yards	2021 Unit Cost	Required Bond Amount
< 500'	0.0	1	0	\$0.80	\$0
> 500'	16.0	1	25,813	\$1.40	\$36,139
<b>Total bond amount for topsoil handling:</b>					<b>\$36,139</b>

## Notes:

- Include all soil horizons.
- Amount is total maximum area where topsoil needs spread during permit term.
- Use higher unit cost for grading if stockpiles are 500 ft. or more from any pit.
- Verify volumes by checking calculations and soil survey information.
- Maximum area may occur during winter months when re-distribution is not possible.

**B3.) PRIME FARMLAND**

Site	Acres	Soil Thickness (ft.)	Cubic Yards	2021 Unit Cost	Required Bond Amount
< 500'	0.0	0	0	\$0.80	\$0
> 500'	0.0	0	0	\$1.40	\$0
<b>Total bond amount for prime farmland:</b>					<b>\$0</b>

## Notes:

- Include all soil horizons.
- Amount is total maximum area where topsoil needs spread during permit term.
- Use higher unit cost for grading if stockpiles are 500 ft. or more from any pit.
- Verify volumes by checking calculations and soil survey information.
- Maximum area may occur during winter months when re-distribution is not possible.

**B4.) SELECTIVE GRADING**

a.) Roads - Site	Length (ft)	Width (ft)	2021 Unit Cost	Required Bond Amount
Haul Road No. 1	0	0	\$1,700	\$0
Haul Road No. 2	0	0	\$1,700	\$0
<b>Total bond amount for selective grading (roads):</b>				<b>\$0</b>

b.) Other Facilities - Site	Acres		2021 Unit Cost	Required Bond Amount
Operational Area	1.0		\$1,700	\$1,700
	0.0		\$1,700	\$0
	0.0		\$1,700	\$0
<b>Total bond amount for selective grading (other facilities):</b>				<b>\$1,700</b>

## Notes:

- Use for grading out roads, ponds, stockpile and storage areas, and other support areas.
- Use for the grading out of treatment ponds and any erosion and sedimentation controls not associated with sediment ponds
- Be sure to include the revegetation calculations in Section C of this form.
- Use selective grading unit cost.

**SECTION B5.) GRADING: SUBTOTALS**

<b>B1: Backfilling:</b>	<u>\$108,890</u>
<b>B2: Topsoil Handling:</b>	<u>\$36,139</u>
<b>B3: Prime Farm Land:</b>	<u>\$0</u>
<b>B4: Selective Grading: (Roads)</b>	<u>\$0</u>
<b>Selective Grading: (Other Facilities)</b>	<u>\$1,700</u>
<b>Subtotal:</b>	<u>\$146,729</u>

**SECTION C. REVEGETATION**

**C1.) REVEGETATION WITH TOPSOIL ON-SITE**

Site	Acres		2021 Unit Cost	Required Bond Amount
Operational Area	20.9		\$2,000	\$41,800
	0.0		\$2,000	\$0
	0.0		\$2,000	\$0
<b>Total bond amount for revegetation with topsoil on-site:</b>				<b>\$41,800</b>

Notes:

- Area is maximum area needing planted at any given time during the permit term.
- Assumes 3-tons/acre lime, 400-lb/acre 10-10-10 fertilizer, 50-lb/acre grass and legume seed mix, and 3-tons/acre mulch application.
- Use unit cost for revegetation only when seeding soil materials.
- Compare area to topsoil placement calculations.
- Can require a specific breakdown if plans in application are significantly different.

**C2.) REVEGETATION WITHPOUT TOPSOIL ON-SITE**

Seed Bed Preparation	Acres	Application Rate		2021 Unit Cost	Required Bond Amount
Seed Bed Preparation:	0			\$0	\$0
Ag. Lime:	0	(tons/acre)	0	\$0	\$0
Nitrogen:	0	(pound/acre)	0	\$0	\$0
Phosphate:	0	(pound/acre)	0	\$0	\$0
Potash:	0	(pound/acre)	0	\$0	\$0
Seed:	0	(pound/acre)	0	\$0	\$0
Mulching:	0			\$0	\$0
<b>Total bond amount for revegetation with topsoil on-site:</b>					<b>\$0</b>

Notes:

- Area is maximum area needing planted at any given time during the permit term.
- Application rates based upon root zone material testing.
- Use specified unit costs when seeding non-soil materials.
- Compare area to topsoil placement calculations.
- Verify that the sampling plan appropriate for site and that samples are properly composited.

**C3.) REFORESTATION**

Site	Acres	Trees/Acre	2021 Unit Cost	Required Bond Amount
Operational Area	23.4	400	\$0.75	\$7,020
Operational Area	10	680	\$0.75	\$5,100
	0	0	\$0.75	\$0
<b>Total bond amount for reforestation:</b>				<b>\$12,120</b>

**SECTION C4) REVEGETATION SUBTOTALS**

<b>C1: Revegetation With Topsoil Onsite:</b>	<u>\$41,800</u>
<b>C2: Revegetation Without Topsoil Onsite - Seed Bed Preparation:</b>	<u>\$0</u>
<b>C3: Reforestation:</b>	<u>\$12,120</u>
<b>Subtotal:</b>	<u>\$53,920</u>

**SECTION D. CHANNEL CONSTRUCTION**

Use for stream relocations and for permanent ditches to remain as part of the post-mining land use.

**D1.) EXCAVATION**

Site	Length	Cross-Section Area (ft <sup>2</sup> )	Cubic Yards	2021 Unit Cost	Required Bond Amount
Operational Area	0	0	0	\$4.75	\$0
	0	0.0	0	\$4.75	\$0
<b>Total bond amount for ditch excavation:</b>					<b>\$0</b>

**D2.) CHANNEL LINING**

Site	Length	Perimeter of Channel (ft)	Square Yards	2021 Unit Cost	Required Bond Amount
Jute Matting:	0	0.0	0	\$2.45	\$0
HV Erosion Control	0	0.0	0	\$2.00	\$0
HV Erosion Control	0	0.0	0	\$2.00	\$0
<b>Total bond amount for channel lining:</b>					<b>\$0</b>

**D3.) CHANNEL WITH ROCK LINING**

Site	Length	Perimeter of Top Rock (ft)	Square Yards	2021 Unit Cost	Required Bond Amount
R-3 (<6")	0	0.0	0	\$31.00	\$0
R-4 (<12")	0	0.0	0	\$40.00	\$0
R-5 (<18")	0	0.0	0	\$28.00	\$0
Geotextile	0	0.0	0	\$2.40	\$0
(PVC) Lining	0	0.0	0	\$0.00	\$0
<b>Total bond amount for channel with rock lining:</b>					<b>\$0</b>



**E2.) POND REMOVAL - STAGE 3**

**A.) TOPSOIL HANDLING (POND REMOVAL - STAGE 3)**

Site	Acres (Topsoil)	Soil Thickness (ft.)	Cubic Yards	2021 Unit Cost	Required Bond Amount
Sed. Pond	0.0	1	0	\$0.80	\$0
Sed. Pond	0.0	1	0	\$0.80	\$0
Sed. Pond	0.0	1	0	\$0.80	\$0
Sed. Pond	0.0	1	0	\$0.80	\$0
<b>Total bond amount for topsoil handling (Pond Removal - Stage 3):</b>					<b>\$0</b>

**B.) REVEGETATION WITH TOPSOIL ON-SITE (POND REMOVAL - STAGE 3)**

Site	Acres		2021 Unit Cost	Required Bond Amount
Sed. Pond	0.0		\$2,000	\$0
Sed. Pond	0.0		\$2,000	\$0
Sed. Pond	0.0		\$2,000	\$0
Sed. Pond	0.0		\$2,000	\$0
<b>Total bond amount for revegetation with topsoil on-site (Pond Removal - Stage 3):</b>				<b>\$0</b>

**C.) BACKFILLING OF THE POND BREASTWORK (POND REMOVAL - STAGE 3)**

Site	Length (ft)	Width (ft)	Depth (ft)	2021 Unit Cost	Required Bond Amount
Sed. Pond	0	0	0.0	\$0.80	\$0
Sed. Pond	0	0	0.0	\$0.80	\$0
Sed. Pond	0	0	0.0	\$0.80	\$0
Sed. Pond	0	0	0.0	\$0.80	\$0
<b>Total bond amount for backfilling of the pond breastwork (Pond Removal - Stage 3):</b>					<b>\$0</b>

**D.) REVEGETATION WITHOUT TOPSOIL ON-SITE (POND REMOVAL - STAGE 3)**

Seed Bed Preparation	Acres	Application Rate		2021 Unit Cost	Required Bond Amount
Seed Bed Preparation:	0			\$0	\$0
Ag. Lime:	0	(tons/acre)	0	\$0	\$0
Nitrogen:	0	(pound/acre)	0	\$0	\$0
Phosphate:	0	(pound/acre)	0	\$0	\$0
Potash:	0	(pound/acre)	0	\$0	\$0
Seed:	0	(pound/acre)	0	\$0	\$0
Mulching:	0			\$0	\$0
<b>Total bond amount for revegetation with topsoil on-site (Pond Removal - Stage 3):</b>					<b>\$0</b>

<b>A: Topsoil Handling:</b>	<b>\$0</b>
<b>B: Revegetation with Topsoil On-Site</b>	<b>\$0</b>
<b>C: Backfilling of the Pond Breastwork</b>	<b>\$0</b>
<b>D: Revegetation without Topsoil On-Site</b>	<b>\$0</b>
<b>Subtotal:</b>	<b>\$0</b>

Notes:

Topsoil Handling

- Amount is total maximum area where topsoil needs spread during permit term.
- Use lower unit cost for grading if stockpiles are less than 500 ft. from any pit.
- Use higher unit cost for grading if stockpiles are 500 ft. or more from any pit.
- Verify volumes by checking calculations and soil survey information.
- Maximum area may occur during winter months when re-distribution is not possible.

Revegetation with Topsoil On-Site

- Area is maximum area needing planted at any given time during the permit term.
- Assumes 3-tons/acre lime, 400-lb/acre 10-10-10 fertilizer, 50-lb/acre grass and legume seed mix, and 3-tons/acre mulch application.
- Use unit cost for revegetation only when seeding soil materials.
- Compare area to topsoil placement calculations.
- Can require a specific breakdown if plans in application are significantly different.

Revegetation without Topsoil On-Site

- Area is maximum area needing planted at any given time during the permit term.
- Application rates based upon root zone material testing.
- Use specified unit costs when seeding non-soil materials.
- Compare area to topsoil placement calculations.
- Verify that the sampling plan appropriate for site and that samples are properly composited.

**E3.) POND REMOVAL: TOTALS**

<b>E1: Pond Removal Active Stage Phase 2</b>	<b>\$7,600</b>
<b>E2: Pond Removal - Stage 3</b>	<b>\$0</b>
<b>Subtotal:</b>	<b>\$7,600</b>

**SECTION F: MAINTENANCE BOND CALCULATIONS**

**F1.) STAGE 3: MAINTENANCE BOND NON CROPLAND AREAS -  
(LAND USES WHERE CROP YIELDS ARE NOT REQUIRED)**

Site	Acres	2021 Unit Cost	Required Bond Amount
Operational Area	0	\$100	\$0
	0	\$100	\$0
<b>Total bond amount for maintenance bond on non cropland areas:</b>			<b>\$0</b>

**F2.) STAGE 3: MAINTENANCE BOND CROPLAND AREAS - NON ROW CROPS PASTURELAND OR  
LAND OCCASIONALLY CUT FOR HAY (EXCLUDES SEED COST)**

Site	Acres	2021 Unit Cost	Required Bond Amount
Operational Area	0	\$490	\$0
	0	\$490	\$0
<b>Total bond amount for maintenance bond on pastureland/LOCFH areas:</b>			<b>\$0</b>



**F3.) STAGE 3: MAINTENANCE BOND CROPLAND AREAS - ROW CROPS (INCLUDES SEED COST)**

Site	Acres	2021 Unit Cost	Required Bond Amount
Operational Area	0	\$890	\$0
	0	\$890	\$0
<b>Total bond amount for maintenance bond on cropland (row crops) areas:</b>			<b>\$0</b>

**F4.) STAGE 3: MOBILIZATION**

Site	Mobilization	2021 Unit Cost	Required Bond Amount
Operational Area	0	\$2,500	\$0
	0	\$2,500	\$0
<b>Total bond amount for mobilization:</b>			<b>\$0</b>

**F5.) STAGE 3 - DITCH REMOVAL**

Site	Feet	2021 Unit Cost	Required Bond Amount
Operational Area	0	\$0.75	\$0
	0	\$0.75	\$0
<b>Total bond amount for Stage 3 - ditch removal:</b>			<b>\$0</b>

**F6.) STRUCTURE DEMOLITION (see notes)**

Site	Actual Cost	Required Bond Amount
Operational Area	0	\$0
	0	\$0
<b>Total bond amount for structure demolition:</b>		<b>\$0</b>

Notes:

- Structure Demolition Costs will be calculated using costs listed in the construction industry's latest annual cost publications, such as *Means Building Construction Cost Data*.

**F7.) MAINTENANCE BOND CALCULATIONS TOTALS**

<b>F1: Stage 3: Maintenance Bond non-Cropland Areas - Crop Yields are not required</b>	<b>\$0</b>
<b>F2: Stage 3: Maintenance Bond Cropland Areas - Non row crops</b>	<b>\$0</b>
<b>F3: Stage 3: Maintenance Bond Cropland Areas - Row crops</b>	<b>\$0</b>
<b>F4: Stage 3: Mobilization</b>	<b>\$0</b>
<b>F5: Ditch Removal - Stage 3</b>	<b>\$0</b>
<b>F6: Structure Demolition</b>	<b>\$0</b>
<b>Subtotal:</b>	<b>\$0</b>

**SECTION G. OTHER ACTIVITES**

For required reclamation activites not shopwn above, such as wetland construction or reconstruction, etc.:

Notes:

- Determine the unit operations nee3ded to accomplish the activity, the dimensions of the activity, materials and their amounts and multiplly by an appropriate unit cost.
- Attach calculations hseets.
- If no unit cost is available, attach an independent, detailed estimate for performing the task.
- Examples: Cost of alkaline addition materials; importation of soil cover material.
- Provide a description of the miscellaneous items(s) and the unit cost below.

**SECTION G1.) - PVC LINER REMOVAL**

Site	Acres	Acres completed per day	Days Required	2021 Unit Cost	Required Bond Amount
Operational Area	0	4	0.0	\$0	\$0
	0	4	0.0	\$0	\$0
<b>Total bond amount for PVC liner removal:</b>					<b>\$0</b>

- Cost based on using Crew B-3A on page 743 of R.S. Means Building Construction Costs 2020 Edition. adjusted for Kittanning, Pennsylvan - 94.7%.

**SECTION G2.) - ALKALINE ADDITION**

Site	Acres	Tons per acre	2021 Unit Cost	Required Bond Amount
Operational Area	0	0	\$0	\$0
	0	0	\$0	\$0
<b>Total bond amount for alkaline addition:</b>				<b>\$0</b>

**SECTION G3.) - WETLAND CONSTRUCTION**

Site	See Attached Sheets	Required Bond Amount
Operational Area	\$0	\$0
	\$0	\$0
<b>Total bond amount for wetland construction:</b>		<b>\$0</b>

**E3.) POND REMOVAL: TOTALS**

<b>G1: PVC Liner Removal:</b>	<u>\$0</u>
<b>G2: Alkaline Addition:</b>	<u>\$0</u>
<b>G3: Wetland Construction:</b>	<u>\$0</u>
<b>Subtotal:</b>	<u>\$0</u>

**SECTION H. SUBTOTAL OF SECTIONS B - G**

Grading Subtotal (Section B5)	<u>\$146,729</u>
Revegetation Subtotal (Section C4)	<u>\$53,920</u>
Channel Construction Subtotal (Section D5)	<u>\$0</u>
Pond Removal (Section E3)	<u>\$7,600</u>
Maintenance Bond Calculations (Section F7)	<u>\$0</u>
Other Activites (Section G)	<u>\$0</u>
<b>Section H: Subtotal:</b>	<u><b>\$208,249</b></u>

**SECTION I. INSTALLATION OF TEMPORARY EROSION & SEDIMENT CONTROLS**

Site	Section H Subtotal Cost	Unit Cost	Required Bond Amount
All Sites	\$0	5%	\$0
<b>Total bond amount for installation of temporary erosion &amp; sediment controls:</b>			<b>\$0</b>

Notes:

- Calculate only when reclamation plan calls for temporary erosion & sediment controls after backfilling and grading. See current Bond Rate Guidelines.

**SECTION J. MOBILIZATION/DEMobilIZATION**

Site	Section H Subtotal Cost	4% of Costs	Maximum Amount	Required Bond Amount
All Sites	\$208,249	\$8,330	\$40,000	\$8,330
<b>Total bond amount for installation of temporary erosion &amp; sediment controls:</b>				<b>\$8,330</b>

Notes:

- Required element of the bond amount.

**SECTION K. TOTAL BOND**

Subtotal (Section H)	<u>\$208,249</u>
Installation or upgrade E & S Controls (Section I)	<u>\$0</u>
Mobilization/demobilization (Section J)	<u>\$8,330</u>
Subtotal from Form 5600-FM-BMP0467	<u>\$0</u>
Subtotal Site Bond (add all lines above)	<u><b>\$216,579</b></u>

**SECTION K. TOTAL BOND (CONT.)**

When will the next bond recalculation be submitted?

If bond is recalculated at Renewal use: Subtotal Site Bond - (Direct Costs + Indirect Costs) \* \* See Below  
 $(1+E)^5$

If bond is recalculated at Mid-Term use: Subtotal Site Bond - (Direct Costs + Indirect Costs) \* \* See Below  
 $(1+E)^3$

**SECTION K. INFLATION ADJUSTMENT BOND**

Site	Direct Costs	Years	Inflation Rate	Required Bond Amount
Mid-Term Inflation	\$216,579	3	1.31%	\$8,624
Permit Renewal Inflation	\$216,579	5	0.00%	\$0
<b>Total bond amount for inflation adjustment:</b>				<b>\$8,624</b>

**TOTAL BOND REQUIRED** **\$225,203**

Notes:

- Attach all worksheets and calculation pages used in determining bond amounts.
- Attach Form 5600-FM-MR0467, "Bond Calculation Worksheet for Demolition of Structures and Mine Seals" if applicable.
- Contact your lead Permit Reviewer for assistance in completing this form.

**SECTION A: APPLICANT INFORMATION**

Company: **Rosebud Mining Company**  
 Mine Name: **Mine 78 Surface No. 3 Mine**  
 SMP/CMAP No: **Pending**  
 Location: **Paint Township, Somerset County**  
 Date: **August 24, 2021**

Full Cost Bonding Calculation Worksheet

**New Application**   
 Bond Adjustment   
 Completion Report   
 Mid-Term Review (Renewal)

**CURRENT BOND AMOUNT: \$225,203**

**PROPOSED BOND AMOUNT: \$0**

**PROPOSED INITIAL BOND CALCULATIONS**  
 based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
 Based on 2021 Bond Rate Guidelines

**SECTION B: GRADING**

<b>B1) Backfilling</b>	See attached pit calculation worksheet	Cubic Yards	Unit Cost	Bond Amount
Pit 1 (< 500')	0	0	\$0.80	\$0
Pit 1 (> 500')	0	38,889	\$1.40	\$54,445
Pit 2 (< 500')	0	0	\$0.80	\$0
Pit 2 (> 500')	0	38,889	\$1.40	\$54,445
<b>(B1) Total Backfilling Bond Required</b>				<b>\$108,890</b>

<b>B1) Backfilling</b>	See attached pit calculation worksheet	Cubic Yards	Unit Cost	Bond Amount
Pit 1 (< 500')	0	0	\$0.80	\$0
Pit 1 (> 500')	0	0	\$1.40	\$0
Pit 2 (< 500')	0	0	\$0.80	\$0
Pit 2 (> 500')	0	0	\$1.40	\$0
<b>(B1) Total Backfilling Bond Required</b>				<b>\$0</b>

<b>B2) Topsoil Handling</b>	Acres	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
< 500'	0.0	1	0	\$0.80	\$0
> 500'	16.0	1	25,813	\$1.40	\$36,139
<b>(B2) Total Topsoil Handling Bond Required</b>					<b>\$36,139</b>

<b>B2) Topsoil Handling</b>	Acres	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
< 500'	0.0	1	0	\$0.80	\$0
> 500'	0.0	1	0	\$1.40	\$0
<b>(B2) Total Topsoil Handling Bond Required</b>					<b>\$0</b>

<b>B3) Prime Farmland</b>	Acres	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
< 500'	0.0	1	0	\$0.80	\$0
> 500'	0.0	1	0	\$1.40	\$0
<b>(B3) Total Prime Farmland Bond Required</b>					<b>\$0</b>

<b>B3) Prime Farmland</b>	Acres	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
< 500'	0.0	1	0	\$0.80	\$0
> 500'	0.0	1	0	\$1.40	\$0
<b>(B3) Total Prime Farmland Bond Required</b>					<b>\$0</b>

<b>B4) Selective Grading</b>	Length (ft)	Width (ft)	Acres	Unit Cost	Bond Amount
Haul Road	0	0	0.0	\$1,700	\$0
Other Facilities			1.0	\$1,700	\$1,700
<b>(B4) Total Selective Grading Bond Required</b>					<b>\$1,700</b>

<b>B4) Selective Grading</b>	Length (ft)	Width (ft)	Acres	Unit Cost	Bond Amount
Haul Road	0	0	0.0	\$1,700	\$0
Other Facilities			0.0	\$1,700	\$0
<b>(B4) Total Selective Grading Bond Required</b>					<b>\$0</b>

<b>(B5) Total Grading Bond Required</b>	<b>\$146,729</b>
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<b>(B5) Total Grading Bond Required</b>	<b>\$0</b>
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**B1 Notes:** When calculating the bond amount for backfilling, estimate the volume of the void created by the entire mining operations, i.e. the maximum volume of open pit(s), Accounting for ramps, roads, benches, shot benches, the upgrade slope of the low wall side), as well as all areas needed for support activities. A 28 degree angle of repose should be used when calculating the volumes.

If mining multiple seams, calculate the volume by benches. Use higher unit cost if spoil is located 500 ft or more from any pit. If spoil is more than 1000 ft from any pit the grading rate cost may be set from a standard reference such as the *Means Building Construction Cost Data*.

Use separate calculations for additional pits. If using other methods to determine volumes, attach calculations.

**B2 Notes:** Include all soil horizons.  
 Verify volumes by checking calculations and soil survey information.

**B3 Notes:** Include all soil horizons.  
 Verify volumes by checking calculations and soil survey information.

**B3 Notes:** Use for the grading out of roads, ponds, stockpile and storage areas, and other support areas.  
 Use for grading out treatment ponds and any erosion and sedimentation controls not associated with sediment ponds.

Company: <b>Rosebud Mining Company</b>	Mine: <b>Mine 78 Surface No. 3 Mine</b>
SMP: <b>Pending</b>	Location: <b>Paint Township, Somerset County</b>

**PROPOSED INITIAL BOND CALCULATIONS**  
based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
Based on 2021 Bond Rate Guidelines

**SECTION C: REVEGETATION**

C1) Revegetation With Topsoil On-Site	Acres	Unit Cost	Bond Amount
Operational Area	20.9	\$2,000	\$41,800
Support Area	0.0	\$2,000	\$0
<b>(C1) Total Revegetation With Topsoil Bond Required</b>			<b>\$41,800</b>

C1) Revegetation With Topsoil On-Site	Acres	Unit Cost	Bond Amount
Operational Area	0.0	\$2,000	\$0
Other	0.0	\$2,000	\$0
<b>(C1) Total Revegetation With Topsoil Bond Required</b>			<b>\$0</b>

Revegetation Without Topsoil	Acres	Tons/acre <sup>(1)</sup> Pound/acre <sup>(2)</sup>	Unit Cost	Bond Amount
Seed Bed Prep.	0.0		\$0	\$0
Ag. Lime <sup>(1)</sup>	0.0	3.0	\$0	\$0
Nitrogen <sup>(2)</sup>	0.0	133.0	\$0	\$0
Phosphate <sup>(2)</sup>	0.0	133.0	\$0	\$0
Potash <sup>(2)</sup>	0.0	133.0	\$0	\$0
Seed <sup>(2)</sup>	0.0	50.0	\$0	\$0
Mulching <sup>(1)</sup>	0.0	3.0	\$0	\$0
<b>(C2) Total Revegetation Without Topsoil Bond Required</b>			<b>\$0</b>	

Revegetation Without Topsoil	Acres	Tons/acre <sup>(1)</sup> Pound/acre <sup>(2)</sup>	Unit Cost	Bond Amount
Seed Bed Prep.	0.0		\$0	\$0
Ag. Lime <sup>(1)</sup>	0.0	3.0	\$0	\$0
Nitrogen <sup>(2)</sup>	0.0	133.0	\$0	\$0
Phosphate <sup>(2)</sup>	0.0	133.0	\$0	\$0
Potash <sup>(2)</sup>	0.0	133.0	\$0	\$0
Seed <sup>(2)</sup>	0.0	50.0	\$0	\$0
Mulching <sup>(1)</sup>	0.0	3.0	\$0	\$0
<b>(C2) Total Revegetation Without Topsoil Bond Required</b>			<b>\$0</b>	

C3) Reforestation	Acres	Trees per acre 400 Slope < 20° 680 Slope > 20°	Unit Cost	Bond Amount
Operational Area	23.4	400	\$0.75	\$7,020
Operational Area	10.0	680	\$0.75	\$5,100
<b>(C3) Total Reforestation Bond Required</b>				<b>\$12,120</b>

Reforestation	Acres	Trees per acre 400 Slope < 20° 680 Slope > 20°	Unit Cost	Bond Amount
Operational Area	0.0	400	\$0.75	\$0
Operational Area	0.0	680	\$0.75	\$0
<b>(C3) Total Reforestation Bond Required</b>				<b>\$0</b>

<b>(C4) Total Revegetation Bond Required</b>	<b>\$53,920</b>
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<b>(C4) Total Revegetation Bond Required</b>	<b>\$0</b>
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- C1 Notes:**
- Area is maximum area needing planted at any given time during the permit term.
  - Assumes 3-tons/acre lime, 400-lb/acre 10-10-10 fertilizer, 50-lb/acre grass and legume seed mix, and 3-tons/acre mulch application.
  - Use unit cost for revegetation only when seeding soil materials.
  - Compare area to topsoil placement calculations.
  - Can require a specific breakdown if plans in application are significantly different.

- C2 Notes:**
- Area is maximum area needing planted at any given time during the permit term.
  - Application rates based upon root zone material testing.
  - Use specified unit costs when seeding non-soil materials.
  - Compare area to topsoil placement calculations.
  - Can require a specific breakdown if plans in application are significantly different.

Company: **Rosebud Mining Company**  
 SMP: **Pending**

Mine: **Mine 78 Surface No. 3 Mine**  
 Location: **Paint Township, Somerset County**

**PROPOSED INITIAL BOND CALCULATIONS**  
 based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
 Based on 2021 Bond Rate Guidelines

**SECTION D: CHANNEL CONSTRUCTION**

Use for stream relocations and for permanent ditches to remain as part of the post-mining land use.

D1) Ditch Excavation	Cross-Section Area (ft <sup>2</sup> )	Length	Cubic Yards	Unit Cost	Bond Amount
Ditch #	0.0	0	0	\$4.75	\$0
Ditch #	0.0	0	0	\$4.75	\$0
Ditch #	0.0	0	0	\$4.75	\$0
<b>(D1) Total Ditch Excavation Bond Required</b>					<b>\$0</b>

Ditch Excavation	Cross-Section Area (ft <sup>2</sup> )	Length	Cubic Yards	Unit Cost	Bond Amount
Ditch #	0.0	0	0	\$4.75	\$0
Ditch #	0.0	0	0	\$4.75	\$0
Ditch #	0.0	0	0	\$4.75	\$0
<b>(D1) Total Ditch Excavation Bond Required</b>					<b>\$0</b>

D2) Channel Lining	Perimeter of Channel (ft)	Length	Square Yards	Unit Cost	Bond Amount
Jute Matting	0.0	0	0	\$2.45	\$0
High Velocity Erosion Control	0.0	0	0	\$2.00	\$0
<b>(D2) Total Channel Lining Bond Required</b>					<b>\$0</b>

Channel Lining	Perimeter of Channel (ft)	Length	Square Yards	Unit Cost	Bond Amount
Jute Matting	0.0	0	0	\$2.45	\$0
High Velocity Erosion Control	0.0	0	0	\$2.00	\$0
<b>(D2) Total Channel Lining Bond Required</b>					<b>\$0</b>

D3) Channel With Rock Lining	Perimeter of Top Rock (ft)	Length	Square Yards	Unit Cost	Bond Amount
R3 (< 6")	0	0	0	\$31.00	\$0
R4 (< 12")	0	0	0	\$40.00	\$0
R5 (< 18")	0	0	0	\$28.00	\$0
Geotextile	0	0	0	\$2.40	\$0
PVC Lining	0	0	0	\$0.00	\$0
<b>(D3) Total Channel Lining With Rock Bond Required</b>					<b>\$0</b>

Channel With Rock Lining	Perimeter of Top Rock (ft)	Length	Square Yards	Unit Cost	Bond Amount
R3 (< 6")	0	0	0	\$31.00	\$0
R4 (< 12")	0	0	0	\$40.00	\$0
R5 (< 18")	0	0	0	\$28.00	\$0
Geotextile	0	0	0	\$2.40	\$0
PVC Lining	0	0	0	\$0.00	\$0
<b>(D3) Total Channel Lining With Rock Bond Required</b>					<b>\$0</b>

D4) Subsurface Drains	Length (ft)	Unit Cost	Bond Amount
Drain #	0.0	\$23	\$0
Drain #	0.0	\$23	\$0
Drain #	0.0	\$23	\$0
<b>(D4) Total Subsurface Drains Bond Required</b>			<b>\$0</b>

Subsurface Drains	Length (ft)	Unit Cost	Bond Amount
Drain #	0.0	\$23	\$0
Drain #	0.0	\$23	\$0
Drain #	0.0	\$23	\$0
<b>(D4) Total Subsurface Drains Bond Required</b>			<b>\$0</b>

<b>(D5) Total Channel Construction Bond Required</b>	<b>\$0</b>
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<b>(D5) Total Channel Construction Bond Required</b>	<b>\$0</b>
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- D Notes:**
- For each channel, there will be channel excavation and a type of channel lining.
  - Types of channel lining include jute matting, high velocity erosion control, R3 rock lining, R4 rock lining, and R5 rock lining.
  - Rock lining requires geotextile underneath the rock and this unit cost should be added to the rock lining cost.
  - If rock lining passes over fill material, a PVC liner must be installed over the fill area.
  - The total quantities for channels include the sum of each channel excavation, type of lining, and use of PVC liner.
  - A typical channel is a trapezoidal channel, which is normally a 2-foot bottom with side slopes that are 2:1.
  - The excavated material is used on the down slope.

Company: **Rosebud Mining Company**  
 SMP: **Pending**

Mine: **Mine 78 Surface No. 3 Mine**  
 Location: **Paint Township, Somerset County**

**PROPOSED INITIAL BOND CALCULATIONS**  
 based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
 Based on 2021 Bond Rate Guidelines

**SECTION E: POND REMOVAL**

**E1.) POND REMOVAL ACTIVE STAGE PHASE 2**

Pond Removal Active Stage 2	Number of Ponds	Unit Cost	Bond Amount
	2	\$3,800	\$7,600
<b>(E1) Total Stage 2 Pond Removal Bond Required</b>			<b>\$7,600</b>

Pond Removal Active Stage 2	Number of Ponds	Unit Cost	Bond Amount
	0	\$3,800	\$0
<b>(E1) Total Stage 2 Pond Removal Bond Required</b>			<b>\$0</b>

**E2.) POND REMOVAL - STAGE 3**

(A) Topsoil Handling	Acres (Topsoil)	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
Pond #	0	1	0	\$0.80	\$0
Pond #	0	1	0	\$0.80	\$0
Pond #	0	1	0	\$0.80	\$0
<b>E2(A) Total Topsoil Handling Bond Required</b>					<b>\$0</b>

Pond Removal Stage 3 Topsoil Handling	Acres (Topsoil)	Soil Thickness	Cubic Yards	Unit Cost	Bond Amount
Pond #	0	1	0	\$0.80	\$0
Pond #	0	1	0	\$0.80	\$0
Pond #	0	1	0	\$0.80	\$0
<b>(D3) Total Channel Lining With Rock Bond Required</b>					<b>\$0</b>

(B) Revegetation with topsoil On-Site	Acres	Unit Cost	Bond Amount
Pond #	0.0	\$2,000	\$0
Pond #	0.0	\$2,000	\$0
Pond #	0.0	\$2,000	\$0
<b>E2(B) Revegetation with On-Site Topsoil Bond Required</b>			<b>\$0</b>

Pond Removal Stage 3 Revegetation	Acres	Unit Cost	Bond Amount
Pond #	0.0	\$2,000	\$0
Pond #	0.0	\$2,000	\$0
Pond #	0.0	\$2,000	\$0
<b>(D3) Total Channel Lining With Rock Bond Required</b>			<b>\$0</b>

(C) Backfilling Breastwork	Length (ft)	Width (ft)	Depth (ft)	Cubic Yards	Unit Cost	Bond Amount
Pond #	0	0	0	0	\$0.80	\$0
Pond #	0	0	0	0	\$0.80	\$0
Pond #	0	0	0	0	\$0.80	\$0
<b>E3(C) Total Backfilling Breastwork Bond Required</b>						<b>\$0</b>

Pond Removal Stage 3 Backfilling	Length (ft)	Width (ft)	Depth (ft)	Cubic Yards	Unit Cost	Bond Amount
Pond #	0	0	0	0	\$0.80	\$0
Pond #	0	0	0	0	\$0.80	\$0
Pond #	0	0	0	0	\$0.80	\$0
<b>(D3) Total Channel Lining With Rock Bond Required</b>						<b>\$0</b>

(D) Revegetation Without Topsoil On-Site	Acres	Tons/acre <sup>(1)</sup> Pound/acre <sup>(2)</sup>	Unit Cost	Bond Amount
Seed Bed Prep.	0.0		\$0	\$0
Ag. Lime <sup>(1)</sup>	0.0	3.0	\$0	\$0
Nitrogen <sup>(2)</sup>	0.0	133.0	\$0	\$0
Phosphate <sup>(2)</sup>	0.0	133.0	\$0	\$0
Potash <sup>(2)</sup>	0.0	133.0	\$0	\$0
Seed <sup>(2)</sup>	0.0	50.0	\$0	\$0
Mulching	0.0	3.0	\$0	\$0
<b>E2(D) Revegetation without On-Site Topsoil Bond Required</b>				<b>\$0</b>

Revegetation Without Topsoil	Acres	Tons/acre <sup>(1)</sup> Pound/acre <sup>(2)</sup>	Unit Cost	Bond Amount
Seed Bed Prep.	0.0		\$0	\$0
Ag. Lime <sup>(1)</sup>	0.0	3.0	\$0	\$0
Nitrogen <sup>(2)</sup>	0.0	5.0	\$0	\$0
Phosphate <sup>(2)</sup>	0.0	5.0	\$0	\$0
Potash <sup>(2)</sup>	0.0	5.0	\$0	\$0
Seed <sup>(2)</sup>	0.0	20.0	\$0	\$0
Mulching	0.0	3.0	\$0	\$0
<b>(E2) Total Stage 3 Pond Removal Bond Required</b>				<b>\$0</b>

<b>(E3) Total Pond Removal Bond Required</b>	<b>\$7,600</b>
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<b>(E3) Total Pond Removal Bond Required</b>	<b>\$0</b>
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Company: **Rosebud Mining Company**  
 SMP: **Pending**

Mine: **Mine 78 Surface No. 3 Mine**  
 Location: **Paint Township, Somerset County**

**PROPOSED INITIAL BOND CALCULATIONS**  
 based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
 Based on 2021 Bond Rate Guidelines

**SECTION F: MAINTENANCE BOND CALCULATIONS**

Stage 3 Non-Cropland	Acres	Unit Cost	Bond Amount
	0.0	\$100	\$0
<b>(F1) Total Maintenance Non-Cropland Area Bond Required</b>			<b>\$0</b>

Stage 3 Non-Cropland	Acres	Unit Cost	Bond Amount
	0.0	\$100	\$0
<b>(F1) Total Maintenance Non-Cropland Area Bond Required</b>			<b>\$0</b>

Stage 3 Non-Row Crops	Acres	Unit Cost	Bond Amount
	0.0	\$490	\$0
<b>(F2) Total Maintenance Non-Row Crops Area Bond Required</b>			<b>\$0</b>

Stage 3 Non-Row Crops	Acres	Unit Cost	Bond Amount
	0.0	\$490	\$0
<b>(F2) Total Maintenance Non-Row Crops Area Bond Required</b>			<b>\$0</b>

Stage 3 Row Crops	Acres	Unit Cost	Bond Amount
	0.0	\$890	\$0
<b>(F3) Total Maintenance Row Crop Areas Bond Required</b>			<b>\$0</b>

Stage 3 Row Crops	Acres	Unit Cost	Bond Amount
	0.0	\$890	\$0
<b>(F3) Total Maintenance Row Crop Areas Bond Required</b>			<b>\$0</b>

Stage 3 Mobilization	Unit Cost per Job	Bond Amount
Applied only for Stage 3 Sites	\$2,500	\$0
<b>(F4) Stage 3 Mobilization Bond Required</b>		<b>\$0</b>

Stage 3 Mobilization	Unit Cost per Job	Bond Amount
Applied only for Stage 3 Sites	\$2,500	\$0
<b>(F4) Stage 3 Mobilization Bond Required</b>		<b>\$0</b>

Ditch Removal	Feet	Unit Cost	Bond Amount
Ditch #	0.0	\$0.75	\$0
Ditch #	0.0	\$0.75	\$0
<b>(F5) Total Ditch Removal Bond Required</b>			<b>\$0</b>

Ditch Removal	Feet	Unit Cost	Bond Amount
Ditch #	0.0	\$0.75	\$0
Ditch #	0.0	\$0.75	\$0
<b>(F5) Total Ditch Removal Bond Required</b>			<b>\$0</b>

Structure Demonlition	See Attached Worksheet (if Necessary)	Bond Amount
Amount Determined from Attached Worksheet		\$0
<b>(F6) Total Structure Demolition Bond Required</b>		<b>\$0</b>

Structure Demonlition	See Attached Worksheet (if Necessary)	Bond Amount
Amount Determined from Attached Worksheet		\$0
<b>(F6) Total Structure Demolition Bond Required</b>		<b>\$0</b>

<b>(F7) Total Maintenance Bond Required</b>	<b>\$0</b>
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<b>(F7) Total Maintenance Bond Required</b>	<b>\$0</b>
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**F Notes:** Structure Demolition Costs will be calculated using costs listed in the construction industry's latest annual cost publications, such as *Means Building Construction Cost Data*.

Company: **Rosebud Mining Company**  
 SMP: **Pending**

Mine: **Mine 78 Surface No. 3 Mine**  
 Location: **Paint Township, Somerset County**

**PROPOSED INITIAL BOND CALCULATIONS**  
 based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
 Based on 2021 Bond Rate Guidelines

**SECTION G: OTHER ACTIVITIES**

Alkaline Addition	Acres	Tons per Acre	Unit Cost	Bond Amount
	0.0	0	\$0	\$0
<b>Total Alkaline Addition Bond Required</b>				<b>\$0</b>

Alkaline Addition	Acres	Tons per Acre	Unit Cost	Bond Amount
	0.0	0	\$0	\$0
<b>Total Alkaline Addition Bond Required</b>				<b>\$0</b>

Equipment Removal	Number	Unit Cost	Bond Amount
Tires	0	\$300	\$0
Other	0	\$0	\$0
<b>Total Equipment Removal Bond Required</b>			<b>\$0</b>

Equipment Removal	Number	Unit Cost	Bond Amount
Tires	0	\$300	\$0
Other	0	\$0	\$0
<b>Total Equipment Removal Bond Required</b>			<b>\$0</b>

Wetland Construction	Acres	Unit Cost	Bond Amount
Site 1	0	\$0	\$0
Site 2	0	\$0	\$0
<b>Total Wetland Construction Bond Required</b>			<b>\$0</b>

Wetland Construction	Acres	Unit Cost	Bond Amount
Site 1	0	\$0	\$0
Site 2	0	\$0	\$0
<b>Total Wetland Construction Bond Required</b>			<b>\$0</b>

<b>(G) Other Activities Bond Required</b>	<b>\$0</b>
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<b>(G) Other Activities Bond Required</b>	<b>\$0</b>
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**SECTION H: SUBTOTAL OF SECTIONS B-G BOND CALCULATIONS**

(B1) Approved Backfilling Bond	\$108,890
(B2) Approved Topsoil Handling Bond	\$36,139
(B3) Approved Prime Farmland Bond	\$0
(B4) Approved Selective Grading Bond	\$1,700
(C1) Approved Revegetation With Topsoil Bond	\$41,800
(C2) Approved Revegetation Without Topsoil Bond	\$0
(C3) Approved Reforestation Bond	\$12,120
(D1) Approved Ditch Excavation Bond	\$0
(D2) Approved Channel Lining Bond	\$0
(D3) Approved Rock Channel Lining Bond	\$0
(D4) Approved Subsurface Drains Bond	\$0
(E1) Approved Pond Removal Bond	\$7,600
(E2) Approved Stage 3 Pond Removal Bond	\$0
(F1) Approved Non-Cropland Bond	\$0
(F2) Approved Non-Row Crop Bond	\$0
(F3) Approved Row Crop Bond	\$0
(F4) Approved Stage 3 Mobilization Bond	\$0
(F5) Approved Ditch Removal Bond	\$0
(F6) Approved Structure Demolition Bond	\$0
(G1) Approved Alkaline Addition Bond	\$0
(G2) Approved Equipment Removal Bond	\$0
(G3) Approved Wetland Construction Bond	\$0

(B1) Approved Backfilling Bond	\$0
(B2) Approved Topsoil Handling Bond	\$0
(B3) Approved Prime Farmland Bond	\$0
(B4) Approved Selective Grading Bond	\$0
(C1) Approved Revegetation With Topsoil Bond	\$0
(C2) Approved Revegetation Without Topsoil Bond	\$0
(C3) Approved Reforestation Bond	\$0
(D1) Approved Ditch Excavation Bond	\$0
(D2) Approved Channel Lining Bond	\$0
(D3) Approved Rock Channel Lining Bond	\$0
(D4) Approved Subsurface Drains Bond	\$0
(E1) Approved Pond Removal Bond	\$0
(E2) Approved Stage 3 Pond Removal Bond	\$0
(F1) Approved Non-Cropland Bond	\$0
(F2) Approved Non-Row Crop Bond	\$0
(F3) Approved Row Crop Bond	\$0
(F4) Approved Stage 3 Mobilization Bond	\$0
(F5) Approved Ditch Removal Bond	\$0
(F6) Approved Structure Demolition Bond	\$0
(G1) Approved Alkaline Addition Bond	\$0
(G2) Approved Equipment Removal Bond	\$0
(G3) Approved Wetland Construction Bond	\$0

<b>(H) Total of Sections B-G Bond Required</b>	<b>\$208,249</b>
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<b>(H) Total of Sections B-G Bond Required</b>	<b>\$0</b>
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Company: <b>Rosebud Mining Company</b>	Mine: <b>Mine 78 Surface No. 3 Mine</b>
SMP: <b>Pending</b>	Location: <b>Paint Township, Somerset County</b>

**PROPOSED INITIAL BOND CALCULATIONS**  
based on 2021 Bond Rate Guidelines

**PROPOSED \_\_\_\_\_ BOND CALCULATIONS**  
Based on 2021 Bond Rate Guidelines

**SECTION I: INSTALLATION OF TEMPORARY EROSION & SEDIMENT CONTROLS**

Temporary E&S Controls	Section H Subtotal	Unit Cost (5%)	Bond Amount
	\$208,249	0.00%	\$0
<b>(I) Total Installation of Temporary E&amp;S Controls Bond</b>			<b>\$0</b>

Temporary E&S Controls	Section H Subtotal	Unit Cost	Bond Amount
	\$0	\$0	\$0
<b>(I) Total Installation of Temporary E&amp;S Controls Bond</b>			<b>\$0</b>

**SECTION J: MOBILIZATION/DEMobilIZATION BOND**

Mobilization/ Demobilization	Direct Costs	4% of Costs	Maximum Amount	Bond Amount
	\$208,249	\$8,330	\$40,000	\$8,330
<b>(J) Mobilization/Demobilization Bond Required</b>				<b>\$8,330</b>

Mobilization/ Demobilization	Direct Costs	4% of Costs	Maximum Amount	Bond Amount
	\$0	\$0	\$40,000	\$0
<b>(J) Mobilization/Demobilization Bond Required</b>				<b>\$0</b>

**SECTION K: TOTAL BOND**

Subtotal (Section H)	\$208,249
Installation or upgrade E & S Cotrols (Section I)	\$0
Mobilization/Demobilization (Section J)	\$8,330
Subtotal from Form 5600-FM-BMP0467)	\$0
<b>Subtotal Site Bond (add all of the lines above)</b>	<b>\$216,579</b>

Subtotal (Section H)	\$0
Installation or upgrade E & S Cotrols (Section I)	\$0
Mobilization/Demobilization (Section J)	\$0
Subtotal from Form 5600-FM-BMP0467)	\$0
<b>Subtotal Site Bond (add all of the lines above)</b>	<b>\$0</b>

Inflation Adjustment	Direct Costs	Inflation Rate	Years to next Permit Review	Bond Amount
Mid-Term	\$216,579	1.31%	3	\$8,624
Renewal	\$216,579	0.00%	5	\$0
<b>Inflation Adjustment Bond Required</b>				<b>\$8,624</b>

Inflation Adjustment	Direct Costs	Inflation Rate	Years to next Permit Review	Bond Amount
Mid-Term	\$0	1.31%	3	\$0
Renewal	\$0	0.00%	5	\$0
<b>Inflation Adjustment Bond Required</b>				<b>\$0</b>

Proposed Required Bond Amount **\$225,203**

Proposed Total Bond Amount **\$0**

2020 Inflation Rate

Increase/Decrease of Required Bond Amount **(\$225,203)**

Company:	<b>Rosebud Mining Company</b>	Township:	<b>Paint</b>
SMP:	<b>Pending</b>	County:	<b>Somerset</b>
Mine:	<b>Mine 78 Surface No. 3 Mine</b>	Date:	<b>August 24, 2021</b>

**Full volume pit bond calculations worksheet.**

**The spoil slope is based on a 50% (26.6 degree) slope.**

**Total Void Volume equals (Pit Void Volume - Pit Bench Volume) + (Spoil Void Volume - Spoil Bench Volume)**

- L1 = Pit length at highwall (parallel to topographic or coal cover contours)
- L2 = Distance from the top of highwall to the point where backfill will be AOC
- H = Maximum depth of pit at highwall
- W = Bottom of pit width
- B1 = Bench length
- B2 = Bench length of spoil void (twice bench height)
- BW = Bench width
- BH = Height of bench from pit floor to top of bench

Pit 1	L1	L2	H	W	B1	B2	BW	BH	Cubic Yards
Pit 1 (Pit Void Volume)	100		60	250					27,778
<b>Pit 1 (Safety Bench Volume)</b>					0		0	0	0
<b>Pit 1 (Total Pit Void Volume)</b>									<b>27,778</b>
Pit 1 (Spoil Void Volume)		120	60	250					11,111
<b>Pit 1 Spoil (Safety Bench Volume)</b>						0	0	0	0
<b>Pit 1 (Total Spoil Void Volume)</b>									<b>11,111</b>
<b>Total Pit 1 Void Volume</b>									<b>38,889</b>

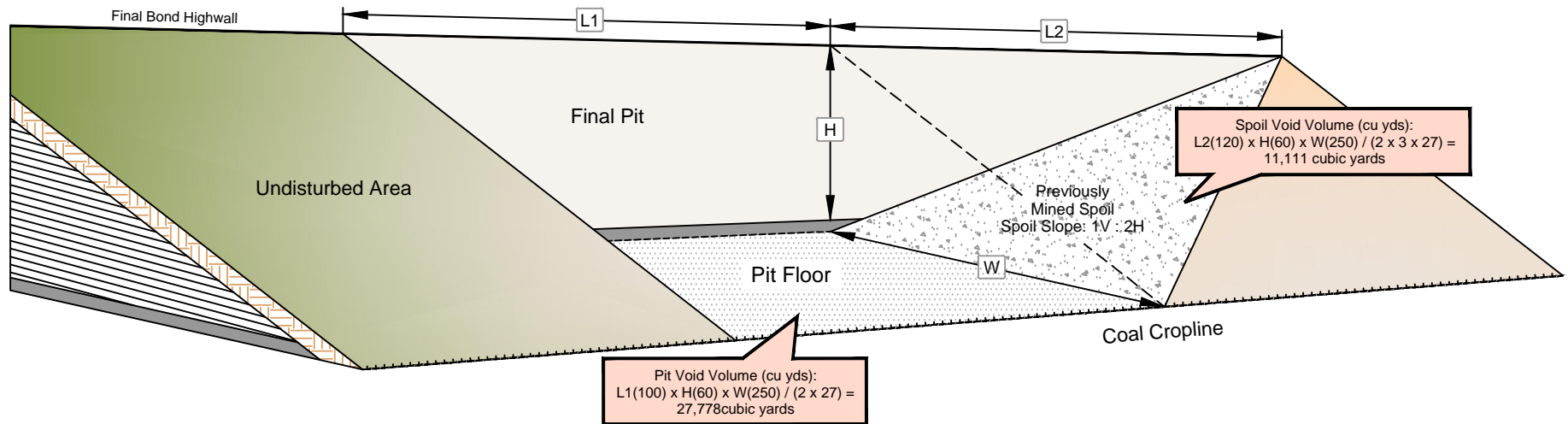
Pit 2	L1	L2	H	W	B1	B2	BW	BH	Cubic Yards
Pit 2 (Pit Void Volume)	100		60	250					27,778
<b>Pit 2 (Safety Bench Volume)</b>					0		0	0	0
<b>Pit 2 (Total Pit Void Volume)</b>									<b>27,778</b>
Pit 2 (Spoil Void Volume)		120	60	250					11,111
<b>Pit 2 Spoil (Safety Bench Volume)</b>						0	0	0	0
<b>Pit 2 (Total Spoil Void Volume)</b>									<b>11,111</b>
<b>Total Pit 2 Void Volume</b>									<b>38,889</b>

<b>TOTAL FULL VOLUME VOID (cubic yards)</b>	<b>77,778</b>
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Company: Rosebud Mining Company  
 SMP No.: Pending  
 Mine: MIne 78 Surface No. 3 Mine  
 Location: Paint Township, Somerset County

## Pit Bond Addendum

Where: L1 = (100) Pit length at highwall (parallel to topographic or coal cover contours)  
 L2 = (120) Distance from top of highwall to point where backfill will be regraded to AOC  
 H = ( 60) Maximum depth of pit at highwall  
 W = (250) Bottom of pit (lowest coal) width  
 B1 = ( 0) Bench length of top of highwall (same as pit length)  
 B2 = ( 0) Bench length of spoil void (twice bench height)  
 BW = ( 0) Bench width  
 BH = ( 0) Height of bench from pit floor to top of bench



Total Void Volume = Pit Void Volume (27,778 cy) + Spoil Void Volume (11,111 cy) = 38,889 cy

The above drawing shows the pit configuration where the pit width extends from coal cropline to highwall, therefore total pit width equals total void width. The volume of void above spoil slope is one-third of the wedge formed by L2, W, and H.

100% of spoil material from this pit will be located within 500 feet of an onsite pit. Maximum unbenched highwall will not exceed sixty (60) feet.

The spoil void volume is based on a 50% (26.6 degree) slope. All distance units are feet; volumes are cubic yards.