



November 15, 2023

Colorado Division of Reclamation, Mining, and Safety  
Mr. Joel Renfro  
Environmental Protection Specialist  
1313 Sherman Street, Room 215  
Denver, CO 80203

Re: M-1993-004 Navajo Mine, Elbert County, Colorado  
Technical Revision No. 3 (TR-03) Adequacy Review Number 2

Dear Mr. Renfro:

General Shale Brick, Inc. (GSB) is in receipt of the adequacy review 2 for the Navajo Mine dated December 7, 2023. The adequacy review cites 9 problems:

1. *The operation is approved for a maximum disturbance of 25 acres. However, your proposed bond estimate only covers costs for reclaiming 16 acres of disturbance. If you only want to be bonded for the existing 16 acres, please let us know. Note that if you plan to disturb additional lands, you'll need to submit a Technical Revision with a revised bond estimate to cover the extra disturbance.*

**General Shale requests to be bonded for 25 acres. The updated bond estimate is enclosed.**

2. *The Division has estimated that the current height of the pit walls is around 40 feet, with slope gradients that are either 1H:1V or 2H:1V. In order to backfill the pit walls to the approved final slope configuration of 3H:1V using cut/fill methods, approximately 120feet of space will be required. However, there may not be enough space within the approved affected area to use cut/fill methods to backfill the western and northern pitwalls as the crest of the western pit wall is currently 75-95 feet from the western affected land boundary, and the northern pit wall's crest is currently 80-90 feet from the northern affected land boundary. On the other hand, there seems to be sufficient space along the eastern and southern pit walls to use cut/fill methods for backfilling these highwalls to 3H:1V.*

*The bond estimate includes two tasks for backfilling the pit walls called "Backfill West Highwall" and "Backfill East Highwall," with volumes provided for each of these tasks (21,250 cy and 41,667 cy, respectively). However, information supporting these chosen volumes, such as a description of the highwalls (e.g., height, total length, existing slope gradient) or the methods to be utilized for backfilling the highwalls (e.g., backfill, cut/fill), has not been provided. Therefore, please provide this information so that the bond estimate can be revised accordingly. If different methods will be necessary for reclaiming portions of the highwalls (e.g., backfill for the western pit wall, cut/fill for the eastern pit wall), the Division recommends splitting these tasks up accordingly, with the method specified in the estimate.*

**General Shale has reviewed this information. First the existing overburden stockpile located on the west side of the pit will be pushed into the pit using a bulldozer so that scrapers would be able to travel over the mud filled pond. Then the scraper team will cut the clay stockpile**



pad area down approximately 3 feet in depth to finish backfilling the pit. Simultaneously with the scraper team backfilling the pit, a bulldozer will grade a 3:1 slope along the east side highwall from south to north approximately 450' in length where the final grade daylights and no more fill is necessary. These reclamation activities will backfill the pit to original topography so that no western and northern highwall remain and the pit will drain into the drainage located to the west of the pit.

3. *General Shale has committed to filling the exposed groundwater in the pit with enough material to reach a minimum of 2 feet above the static water level for final reclamation. A part of the bond estimate includes a task for "Backfill Pit", which requires a material volume of 21,322 cubic yards. Please provide information that supports how the material volume was estimated, such as the static water level in the pit or the surface area of water in the pit.*

**General Shale obtained this information from scraper load counts from the 2000 mining campaign. This is the existing overburden stockpile located along the west and north sides of the pit.**

4. *The bond estimate includes a task for "Place Topsoil" with an estimated volume of 11,062 cubic yards. However, this volume does not match the approved topsoil replacement depth of 6 inches, and the current disturbance at the site requires retopsoiling. While 16 acres of land are currently disturbed, the plan is to leave a 0.3-acre livestock pond, resulting in 15.7 acres of disturbed land that will need to be retopsoiled and revegetated for reclamation. Based on this information, the Division estimates that 12,665 cubic yards of topsoil will be required for retopsoiling the 15.7 acres of disturbed land. To move forward, please specify the portion of disturbed land in acres that will be retopsoiled for reclamation and adjust the bond estimate accordingly.*

**General Shale has reviewed this information. Approximately 3.1 acres are located under the existing overburden stockpile and topsoil stockpile where topsoil doesn't have to be replaced. Therefore, there are 12.6 acres that where topsoil must be replaced. With 6" of average depth, approximately 10,164 cubic yards of topsoil are needed. From the 2000 mining campaign it is estimated that 11,062 cubic yards were stockpiled. The extra topsoil will be placed in the pit area at ~8" thick.**

5. *The mining plan map has been updated and it now indicates the storage locations of the existing topsoil and overburden stockpiles along the northern and western edges of the pit. However, the Division's field observations suggest that there is also topsoil bermed around the perimeter of the stockpile area and adjacent to the access road. Therefore, it is necessary to specify the precise locations of all topsoil and overburden stockpiles on the site and ensure that the revised mining plan map includes this information. It is important to consider the location of topsoil and overburden stockpiles since it affects the bond estimate, such as the haul distance. Therefore, the Division recommends dividing the topsoil tasks into different parts to reflect the different costs associated with different haul distances for specific portions of the disturbed lands. For instance, the topsoil task can be split into three different tasks, including one for the pit area, one for the stockpile area, and one for the access road.*



**General Shale has updated the reclamation estimate to include the pit, access road, and clay stockpile pad area as separate areas and has adjusted the topsoil volumes accordingly.**

6. *For reclamation, the operator is proposing to mix overburden with (up to 500 cy) imported scrap brick and place it into the pit in 1-2 foot lifts. Please include a task in the bond estimate that includes costs for this proposal.*

**The revised bond estimate includes placing the scrap brick into the pit. The reason for combining the two estimates is that it is unknown how much scrap brick will be in a stockpile and how much will be in check dams. Also, the quantity of material is small when compared to the other reclamation tasks and the cost to move this material is small when compared to the reclamation cost estimate. This estimate is combined with reclaiming the stormwater ditches and check dams as noted in item 7.**

7. *The proposed stormwater management plan includes a series of check dams composed of imported scrap brick, stormwater berms, and ditches. Based on the revised reclamation plan map, it appears these stormwater features will be reclaimed. However, there is no task included for reclaiming these features. Please include a task in the bond estimate that includes costs for reclaiming the stormwater features. Additionally, please provide sufficient information on the stormwater features (e.g., number of check dams, approximate dimensions, material volumes) and how they will be reclaimed (e.g., scrap brick backfilled in pit, berms graded) to support the costs provided in the estimate.*

**The revised bond estimate includes reclaiming the stormwater ditches and check dams. This estimate is combined with placing the scrap brick into the pit as noted in item 6.**

**It is difficult to determine the exact number of check dams required over the life of the mine due to changing grades throughout the life of the pit. Currently there will be 25 check dams with a combined volume of 185 cubic yards. The scrap brick for the dams will be blended with overburden and placed into the pit using a scraper. The ditches will be filled, and the berms graded using a motor grader.**

8. *The bond estimate includes a task for "Fertilizer". Please specify the type, application rate, and soil incorporation methods for the fertilizer that is planned to be utilized for reclamation.*

**The potassium nitrate fertilizer will be applied with a tractor towed spreader at 40 pounds/acre. General Shale requested and has received an updated cost for this type of fertilizer.**

9. *The bond estimate does not include indirect costs. Please be advised, the Division's cost estimate must include indirect costs for overhead and profit, legal, engineering, and project management, which typically add 22-28% on top of the direct costs. While it is not necessary for indirect costs to be included in your bond estimate, just be aware that it will be included in the Division's final estimate.*

**General Shale understands that indirect costs will be added to the Division's estimate.**



Please feel free to contact me with any questions at 303-783-3058 or by email at [jason.mcgraw@generalshale.com](mailto:jason.mcgraw@generalshale.com).

Sincerely,  
General Shale Brick, Inc.

A handwritten signature in blue ink that reads "Jason E. McGraw".

Jason E. McGraw P.E.  
Mine Supervisor



Item	Equipment Used	Cubic Yards	Cost Per Cubic Yard	Cost	Assumptions
Backfill Pit with Existing Overburden Stockpile with Depth of Fill ~10'	Caterpillar D8T Bulldozer	21,322	\$0.76	\$ 16,140.60	Use Bulldozer to push existing overburden stockpile into pit filling pit to existing grade ~6105'. No northern or western highwall will be remaining. Depth of fill ~20' measured at center deepest part of pit. Maximum push distance ~150'. Quantity from 2000 mining campaign.
Grade East Highwall to 3:1 Slope and fill southern 1/3 of pit to final elevation	Caterpillar D8T Bulldozer	8,334	\$0.76	\$6,312.60	Use bulldozer to cut eastern highwall ~450 feet of length, 10' high (average of 15' at south end of cut and 5' at north end of cut and width is 100'. Grade to 3:1 slope with 1:1 slope existing in pit. Maximum push distance is ~150'.
Cut clay stockpile pad area and use fill to backfill pit to final grade	Caterpillar 627G Scraper, water truck, Caterpillar 140 M motor grader, Caterpillar D8T	16,456	\$2.95	\$48,622.50	Cut existing 3.4 acre clay stockpile pad area down 3' depth and place in pit so pit will drain.
Replace Topsoil Pit	Caterpillar 627G Scraper, water truck, Caterpillar 140 M motor grader, Caterpillar D8T	3,442	\$ 1.79	\$ 6,173.73	Using scraper team replace 8" topsoil in pit. Keep existing pit size of 3.2 acres. Rest of pit over life of pit will be concurrently reclaimed and topsoil replaced.
Replace Topsoil Pad Area	Caterpillar 627G Scraper, water truck, Caterpillar 140 M motor grader, Caterpillar D8T	4,437	\$2.86	\$12,706.39	Using scraper team replace topsoil in clay stockpile pad area. Clay stockpile pad area is 5.5 acres and depth of topsoil is 6".
Replace Topsoil Road	Caterpillar 627G Scraper, water truck, Caterpillar 140 M motor grader, Caterpillar D8T	3,227	\$4.78	\$15,434.31	Using scraper team replace topsoil in road. Road acreage is 4.0 acres and depth of topsoil is 6".



Item	Equipment Used	Cubic Yards	Cost Per Cubic Yard	Cost	<b>Assumptions</b> Since quantity is low and scrap brick is in 2 places in check dams and stockpile combine the two items. Increase amount by 25% due to overburden filling in check dams due to erosion.
Place Scrap Brick In Pit, Remove Check Dams and Grade Stormwater Ditches	Caterpillar 627G Scraper, water truck, Caterpillar 140 M motor grader, Caterpillar D8T	625	\$2.98	\$1,862.50	
Equipment Mobilization				\$4,000.00	
<b>Total</b>				<b>\$111,252.63</b>	

Item		Acres	Cost Per Acre	Cost
Rip, seed, mulch and Crimp		25	\$ 1,050.00	\$26,250.00
Fertilizer		25	\$ 200.00	\$5,000.00
Weed Control		25	\$ 60.00	\$ 1,500.00
Mobilization				\$2,325.00
<b>Total</b>				<b>\$35,075.00</b>

<b>Total Estimated Bond Cost</b>	<b>\$146,327.63</b>
<b>Recommend Bond be set at</b>	<b>\$146,330.00</b>