

Freeport-McMoRan Chino Mines Company  
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May 17, 2018

**Certified Mail #7017304000031901985**  
**Return Receipt Requested**

Mr. David Ennis  
Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
Mining Act Reclamation Program  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Dear Mr. Ennis:

**Re: Freeport-McMoRan Chino Mines Company – Response to Technical  
Comments on Revision 17-2 for the 9 Waste Rock Stockpile, Permit No. GR009RE**

Freeport-McMoRan Chino Mines Company (Chino) submitted an application dated April 5, 2017 to revise Permit Number GR009RE to request a Design Limit expansion and submit a closure plan for the construction of the 9 Waste Rock Stockpile (9 WRS). The Mining and Minerals Division (MMD) in a letter dated July 17, 2017, deemed this application administratively complete. This letter provides responses to comments from MMD to Chino in a letter dated March 19, 2018. The MMD comments are italicized and Chino responses follow.

1. *Page 6 of the Application states that stormwater in the 9 WRS basin flows into the open pit and that there will be no change to the stormwater flow direction during construction of the stockpile. However, the proposed location for the 9 WRS is currently Reservoir 9 which appears to impound and retain impacted stormwater, with no surface drainage to the pit. Please address and clarify.*

Reservoir 9 is within the Area of Open Pit Hydrologic Containment and Open Pit Surface Drainage Area. Currently, Stormwater in the 9WRS basin flows into Reservoir 9, infiltrates and reports to the Santa Rita Open Pit. Prior to the construction of the 9WRS, the reservoir will be dewatered and used as part of the SXEW operations. During construction and at final build out, the stockpile will be lower than the top of the surrounding ridges. Run off from the stockpile and its surroundings will continue to infiltrate and report to the pit.

2. *Page 6 of the Application states that Chino is not proposing to construct any impoundments as part of the 9 WAS. However, during operation of the 9 WAS, it appears that surface water will continue to be impounded, at least temporarily, within some portion of Reservoir 9. Please describe the anticipated location where surface water will be retained during operation of the 9 WAS. Further, please describe the long-term approach for stormwater detention/retention during operation, and post-reclamation, of 9 WRS, in the absence of needing an impoundment.*

Chino does not intend to construct a retention pond during the construction and operation phase of this stockpile due to the reasons outlined in response 1 above. During closure, the

non-impacted stormwater will be allowed to pond in the North West corner of the stockpile and then evaporate or infiltrate into the Santa Rita Open pit.

3. Page 11, Section 5.0 of the CCP states that "armored channels, perimeter berms and hydraulic structures will be designed to control erosion and safely convey stormwater." Similarly, Page 12 states that "run-on from the surrounding terrain will be controlled by perimeter channels located around the 9 WRS" with these channels directing surface water flows around the perimeter of the stockpile. Sheet 6 does not show a typical schematic of either the proposed perimeter berms or perimeter channels. Please provide a typical schematic for these construction features.

Chino referred to the perimeter channel as "Off-Site Channel" in this CCP. Sheet 4 shows the perimeter channel (off-site channel) around the west toe of the proposed stockpile. The perimeter channel will be designed using the same design criteria as the 'Typical Top Channel' shown on Sheet 6.

4. Table 7-1 of the CCP: Please add a column to this table that reports the application rate of the proposed seed mix as PLS per square foot.

The seeding rate in the permit and CCP have traditionally been expressed as pure live seed (PLS) pounds per acre. In accordance with Appendix C of GR009RE, Chino has always provided the seed mix application rate as PLS lb/ac. Nonetheless, Chino has revised Table 7-1 to show the application rate PLS per square foot as requested.

**Table 7-1: Proposed Seed Mix and Rates for the 9 WRS Site  
 (modified April 4, 2018)**

Species <sup>a</sup>	Life-Form	Duration <sup>b</sup>	Seasonality	Rate <sup>a,c</sup> lb/ac	Rate <sup>d</sup> seeds/ft <sup>2</sup>
<b>Primary</b>					
Blue grama ( <i>Bouteloua gracilis</i> )	Grass	Per	Warm	0.25	4.7
Side-oats grama ( <i>Bouteloua curtipendula</i> )	Grass	Per	Warm	1.25	4.4
Black grama ( <i>Bouteloua eriopoda</i> )	Grass	Per	Warm	0.10	3.1
Green sprangletop ( <i>Leptochloa dubia</i> )	Grass	Per	Warm	0.15	1.9
Plains lovegrass ( <i>Eragrostis intermedia</i> )	Grass	Per	Intermediate	0.05	3.8
Bottlebrush squirreltail ( <i>Sitanion hystrix</i> )	Grass	Per	Cool	1.25	5.5
New Mexico needlegrass ( <i>Stipa neomexicana</i> )	Grass	Per	Cool	1.75	4.6

Streambank wheatgrass ( <i>A. dactachyum v. riparium</i> )	Grass	Per	Cool	1.50	5.4
Apache plume ( <i>Fallugia paradoxa</i> )	Shrub	Per	NA	0.10	1.0
Mountain mahogany ( <i>Cercocarpus montanus</i> )	Shrub	Per	NA	1.00	1.4
Winterfat ( <i>Eurotia lanata</i> )	Shrub	Per	NA	0.60	0.8
White prairie clover ( <i>Dalea candida</i> )	Shrub	Per	NA	0.15	1.2
Globe mallow ( <i>Sphaeralcea sp.</i> )	Forb	Per	NA	0.10	1.1
Blue flax ( <i>Linum lewisii</i> )	Forb	Per	NA	0.15	1.0
<b>Total PLS</b>				<b>8.40</b>	<b>40</b>
<b>Alternate</b>					
Needle-and-thread ( <i>Stipa comata</i> )	Grass	Per	Cool	ND	NA
Thickspike wheatgrass ( <i>Agropyron dactachyum</i> )	Grass	Per	Cool	ND	NA
Sand dropseed ( <i>Sporobolus ryptrandrus</i> )	Grass	Per	Intermediate	ND	NA
Tobosa ( <i>Hilaria mutica</i> )	Grass	Per	Warm	ND	NA
Bush muhly ( <i>Muhlenbergia porteri</i> )	Grass	Per	Warm	ND	NA
Squawberry ( <i>Rhus trilobata</i> )	Shrub	Per	NA	ND	NA
Fourwing saltbush ( <i>Atriplex canescens</i> )	Shrub	Per	NA	ND	NA
Prairie coneflower ( <i>Ratibida columnaris</i> )	Forb	Per	NA	ND	NA

**Notes:**

<sup>a</sup> Seed mix and rates are subject to change based on future investigations

<sup>b</sup> Per – Perennial; Ann = Annual

<sup>c</sup> Rate is in pounds of PLS per acre; substitutions may change seeding rates

<sup>d</sup> Rate is in PLS per square foot; substitutions may change seeding rates

lb/ac = pounds per acre

NA = Not applicable

ND = Not determined  
PLS = Pure live seed

5. *Table 7-3 of the CCP: 2.6% canopy cover seems low, but is this only accounting for the species listed in Table 7-1? Please provide a brief written explanation of the numerical diversity guidelines listed in this table and how these criteria were established.*

The minimum % canopy cover for the various life-forms presented on Table 7-3 are consistent vegetation success standards approved under Rev 01-01 of Permit GR009RE. These minimum lifeform values should not be confused with the total canopy cover requirement, which is 70% of the reference area canopy cover. A more complete explanation of the rationale for the diversity standards listed in Table 7.3 can be found in the Interim Technical Standards for Revegetation Success Chino Mine Company submitted to the MMD in 1999.

6. *Sheet 4 of the CCP: It is unclear where stormwater will be conveyed once the 9 WRS is reclaimed. Based on Sheet 4, it appears that stormwater will collect in a low point on the north-northwest side of the 9 WRS between the toe of 9 WRS and the mine haul road embankment. However, no impoundments are proposed in this location and this location does not appear to discharge via the surface to the pit due to the topography of the haul road embankment. Please describe where and how stormwater will be detained/retained post-reclamation.*

Due to the topography in the 9 Stockpile area, non-impacted storm water cannot be feasibly diverted away from the Santa Rita Open pit. Non-impacted storm water from the west outcrops of the stockpile and the surrounding ridges will be allowed to pond at low spot (designated discharge area) located at the northwest corner of the stockpile. The stormwater will evaporate or infiltrate and finally report to the Santa Rita Open pit. Stormwater from the north outcrops and on top of the stockpile will be discharged through the northwest downdrain into the open pit because the toe of the downdrain is at the same elevation as the haul road to the north of the proposed stockpile. Many of these questions are better suited for a face-to-face conversation. If we have not sufficiently answered the question, perhaps a meeting would help to clarify this information.

7. *Appendix A, Section 2.0, page 3 states that "the 9 Stockpile will be constructed at an overall slope that will result in 3:1 (horizontal:vertical) slope after reclamation benches are cut in." Elsewhere in the Application and CCP, an overall slope of 3.5H:1V is proposed. Please clarify.*

The 9 WRS will be built with benches at an overall 3.5H:1V slope (see Sheet 3). During closure, the stockpile will be regraded to create 200 ft. uninterrupted slopes at a 3H:1V slope (see 'Typical Reclamation Outslope Bench for 3.5:1V' on Sheet 6).

Permit GR009RE allows for the construction of 300ft. uninterrupted slopes. For the purpose of calculating financial assurance cost estimate for this stockpile, Chino used 200ft uninterrupted slope but has the discretion to design for 300ft uninterrupted slope length during final closure.

8. *Appendix A, page 3 and Sheet 6 shows 2.0 feet of cover under the outslope terrace channel and downdrains, however, there should be a minimum of 3.0 feet of total cover over the waste material at reclamation. Please address.*

The term cover should not be applied to the minor area directly underneath a water conveyance channel. Cover is typically used to describe the loose material placed over mined materials that provides a suitable seedbed for plants. For financial assurance

purposes, Chino includes the volume of cover sufficient to cover the entire stockpile (including channels). However, when designing and building channels, the "cover" material is placed and compacted underneath a layer of riprap that is typically 1 foot or more thick. Altogether this produces a result that forms together well in construction and yields a minimum of 3 feet of imported "cover" over the underlying mined materials. However, the goal under channels is not to grow plants. It is to provide a well-compacted separating layer for water to flow over with riprap to protect it from eroding. So at this conceptual stage of design, we calculate volumes that would yield 3 feet of loose cover everywhere, but to accommodate good channel construction, the CCP clearly states the intended objective of a minimum of 2 feet compacted cover under the channel. This approach has been accepted by MMD at all of the Chino reclamation completed to date. Again, if this is not clear, it may be useful for Chino to meet with the commenter and show examples of the final approved reclamation and as-builts where this approach has been implemented and deemed sufficient. FA is not affected either way, because it already accounts for 3 feet of cover everywhere over mined materials.

9. *Please describe the benefits and consequences of placing gravel over the cover material within the outslope terrace channels and downdrains versus using a geotextile material.*

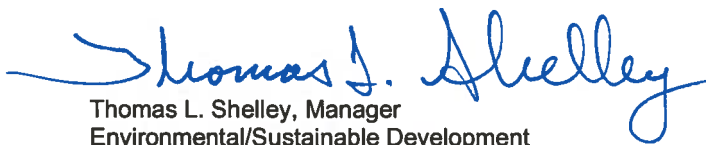
In final design and construction, FMI has applied several different channel armoring designs at New Mexico Operations. For the purpose of calculating financial assurance cost estimates, Chino opted to use gravel as a filter-compatible layer underlying riprap. This is equivalent to using geotextile with a protective cover below and above to provide a filter-compatible layer underneath channel armoring. This approach is consistent with the CCP development at other locations at Chino and Tyrone. Whether to use a geotextile or gravel products is a final design decision based on many factors.

10. *Please commit to soil salvage, where practicable, and proper storage of salvaged material prior to construction of the 9 WRS.*

The topography at the proposed 9 WRS location consist of steeply sloping bedrock with very little topsoil available to salvage practically and economically. Chino however believes that topsoil is a valuable asset for reclamation and where practical, Chino has committed to salvage topsoil prior to construction. Chino will not be able to practically and economically salvage topsoil in this location.

Please contact me at (575) 912- 5773 if you have questions on these responses.

Sincerely,

  
Thomas L. Shelley, Manager  
Environmental/Sustainable Development

TLS:rlm  
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