

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

In the Matter of:)	
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)	
PROPOSED AMENDMENT)	No. WQCC 12-01(R)
TO 20.6.2 NMAC (Copper Rule))	
)	
)	

WRITTEN REBUTTAL TESTIMONY OF MICHAEL J. GRASS

My name is Michael J. Grass. I am presenting this written rebuttal testimony on behalf of Freeport-McMoRan Chino Mines Company, Freeport-McMoRan Tyrone Inc., and Freeport-McMoRan Cobre Mining Company (collectively, "Freeport") regarding the Petition to Adopt 20.6.7 NMAC and Request for Hearing filed by the New Mexico Environment Department ("NMED") on October 30, 2012, as modified by the Amended Petition filed on February 18, 2013 which includes the new rules for copper mines ("Proposed Rule"). My experience and qualifications are presented in my written direct testimony previously filed in this matter.

I. REBUTTAL TESTIMONY IN RESPONSE TO THE DEPARTMENT'S AMENDED PETITION DATED FEBRUARY 18, 2013

I have reviewed the revisions to the Proposed Rule language presented in the Department's Amended Petition dated February 18, 2013 and have the following comments and testimony. In regard to NMED's proposed amendment to the definition of "seepage" in 20.6.7.7(51) NMAC, I believe that the proposed definition is too specific. Water can pass through a stockpile or even tailings and not leach anything from the mine materials. Also, using

the word seep in the definition of seepage is incorrect. The definition should use the term “water flow” instead of “seep.” This would make the definition read as follows:

“Seepage” means leachate that is discharged from a waste rock stockpile or tailing impoundment and emerges as water flow above or at the ground surface or that is present in the vadose zone and may be captured prior to entering ground water.

In regard to NMED’s proposed amendment to 20.6.7.20A(1) NMAC, the language was changed to state that a liner must remain functional for five years after the implementation of closure. The October 30, 2012 version of the Proposed Rule required that it be functional for five years after the operational life. I believe that the language in the October 30, 2012 version of the Proposed Rule should be adopted, as it properly assumes that within five years of no longer leaching a stockpile that the majority of draindown has occurred and a full liner system will no longer be needed. This is consistent with my experience with leach stockpiles. Accordingly, I believe that the language in the October 30, 2012 version of the Proposed Rule should be adopted.

NMED has proposed changing Section 20.6.7.20.C(1)(c) NMAC to include the term “and corrected.” This change creates unnecessary ambiguity. It is unclear if this term means that the instability must be corrected within 24 hours or if an operator does not have to report the instability until 24 hours after instability is fixed. If NMED means that the instability must be corrected within 24 hours, then this may or may not be possible depending on the type and evidence of instability. To avoid any ambiguity, the language in the October 30, 2012 version of the Proposed Rule should be adopted.

NMED has proposed amending Section 20.6.7.21.B to change engineering design requirements for waste rock stockpiles. Specifically, NMED has added more detail to the stormwater management of both runoff and runoff from a stockpile, as well as details for an

aquifer evaluation and design of an interceptor well system. The language for the interceptor well system should be changed to state that the design will only be required if the aquifer evaluation determines that water quality standards would be exceeded. The way the language reads now is that all stockpiles will be designed with interceptor system regardless of other engineering controls or the results of the aquifer evaluation. I believe that the language in the October 30, 2012 version of the Proposed Rule should be adopted.

III. REBUTTAL TESTIMONY IN RESPONSE TO WRITTEN DIRECT TESTIMONY OF MR. JAMES KUIPERS

On pages 6 and 7 of his testimony, Mr. Kuipers contends that the Technical Committee that discussed the Proposed Rule agreed that a high degree of specification should be sought in the Rule to provide the proponent with information necessary to meet the intent and requirements of the rules and minimize NMED review time and any disagreements. Further, he contends that the engineering design requirements for waste rock stockpiles were the product of the discussions, and the August 17th draft should be reinstated. I disagree. I participated in many of the technical committee meetings, and the August 17th draft was not a consensus document and varied substantially from the recommendations I made as a Freeport consulting expert. For example, the August 17th requirement for use of liners as a standard requirement for waste rock stockpiles was not consistent with my recommendation. Discussions within the Technical Committee for waste rock stockpile required that material characterization, material handling plans, and engineering controls be put in place to prevent an exceedance of ground water standards. A liner system was discussed as one possible engineering control, but that the characteristics of each stockpile could vary, and there was no agreement that all stockpiles would require a geomembrane liner. The August 17th draft did not reflect the proposed requirements discussed by the Technical Committee. In fact, the liner system described within the August

17th draft was not a liner system discussed by the Technical Committee for use in waste rock stockpiles. The liner system identified in the August 17th draft was copied from the Technical Committee discussion of leach stockpiles. Accordingly, I do not believe that Mr. Kuiper's statement has merit. I believe that the language in the Proposed Rule reflects the discussions by the Technical Committee.

On page 7 of his written direct testimony, Mr. Kuipers states that Freeport's existing systems do not represent current engineering design best practices, including a liner system to collect drainage, and cites to GARD Guide Section 6.6.6 to support his statement. I disagree with this statement. The GARD Guide does not specifically prescribe the use of liners as part of a stockpile design, but does list the use of hydrogeologic and hydrodynamic controls as one option in the design of a facility. It is currently not industry practice to use liners prescriptively in facility design. Each stockpile is evaluated based on site conditions, mine material properties, and available construction materials. Very few waste rock stockpiles are currently designed with the use of liners. Material handling plans and, if necessary, water management and seepage collection systems, are the primary engineering controls for waste rock stockpiles. The Proposed Rule regarding waste rock stockpiles reflects this standard practice, while allowing the Department to require a liner based on site-specific conditions, and should be adopted.

For these reasons, I disagree with the changes to the Proposed Rule suggested in Mr. Kuiper's direct written testimony and the exhibits presented by GRIP and Turner Ranches.

IV. REBUTTAL TESTIMONY IN RESPONSE TO WRITTEN DIRECT TESTIMONY OF MS. CONNIE TRAVERS

I have reviewed the direct written testimony submitted by Ms. Connie Travers on behalf of the New Mexico Attorney General. On page 3 of her written direct testimony, Ms. Travers asserts that the Proposed Rule relies on interceptor systems capturing ground water degraded by

seepage from waste rock and tailings impoundments rather than preventing degradation. I disagree with this statement. The Proposed Rule requires measures other than liners, similar to existing permit requirements, considers industry best practices and the feasibility of liner systems, and relies on interceptor wells as necessary. It is my opinion that engineering controls and site conditions should dictate whether an interceptor system is required.

On page 9 of her written direct testimony, Ms. Travers states that liners would not be required for new waste rock stockpiles, and although NMED can require liners if it determines standards would not be met at a monitoring well, there is no certainty that NMED would require liners in such a case. If an evaluation of a waste rock stockpile without a liner shows that standards will not be met at a monitoring well, NMED has the discretion to require the evaluation of a liner, and there is no reason to expect that they would not. In this respect, the Proposed Rule is at least as strict, if not more strict, than the existing rule and permit requirements. Liners are an engineering control that should be considered as part of any design. In particular, if the materials characterization, handling plan, and proposed engineering controls cannot demonstrate that discharge from a stockpile will not exceed water quality standards, then a liner must be considered. The language of the Proposed Rule expressly states that NMED can require liners in stockpile design. Accordingly, I support the current language in the Proposed Rule.

On page 15 of her written direct testimony, Ms. Travers asserts that new waste rock facilities and tailings impoundments are not required to have liners, and capturing contaminated groundwater can be difficult and uncertain, so there is a significant risk that contaminated ground water will migrate beyond the interceptor systems. Again, I disagree with this assertion. Seepage and groundwater capture is well accepted, as is the potential for liners themselves to

leak. Whether ground water capture is difficult or uncertain is dependent on site specific conditions. Each individual facility location should be evaluated for the type of facility, and engineering controls designed that are appropriate for those conditions. That may include an interceptor well system or liner system, but it also may not.

On page 16 of her written direct testimony, Ms. Travers states that the Proposed Rule relies on capture of degraded water by interceptor wells rather than prevention. In fact, the Proposed Rule identifies and requires many pollution prevention measures other than liners and interceptor wells, which Ms. Travers ignores. Prevention of seepage and infiltration are part of the required runoff and runoff controls as well as other engineering controls required by the Proposed Rule. Interceptor wells are merely one option among many engineering controls. However, interceptor wells are part of industry standard designs for mining facilities and should be part of any design where site conditions warrant.

On page 16 of her written direct testimony, Ms. Travers asserts that the Proposed Rule does not require that site specific conditions be considered in determining a variance, and site specific review provides additional ground water protections. The Proposed Rule requires consideration of site specific conditions in a number of locations, including by an engineer designing the facility, in determining monitoring well locations, and in designing seepage collection and interceptor well systems as required. The Proposed Rule specifically states that site specific conditions must be evaluated as part of any design. No design can be strictly prescriptive as site conditions change even within a single mining facility. Accordingly, I do not think that Ms. Travers statement regarding the Proposed Rule is accurate.

On page 16 of her written direct testimony, Ms. Travers states that allowing ground water to become contaminated above standards and then capturing the degraded water is less protective

and poses a greater risk to ground water than preventing the degradation in the first place. Ms. Travers' statement oversimplifies in that it does not address the feasibility of preventing the limited contamination and other relative risks, such as the threat to ground water posed by a lined tailings impoundment with a failed drainage system, where there could be a greater risk of more widespread impacts to groundwater due to an uncontrolled release from a tailings impoundment that is no longer stable, compared to an engineered, controlled system.

On page 22 of her written direct testimony, Ms. Travers asserts that the Attorney General's proposed amendments to the Proposed Rule for waste rock stockpiles would require a liner or its equivalent if a waste rock stockpile may cause an exceedance of standards and not rely on interceptor wells. I disagree with Ms. Travers. Interceptor well systems are commonly used, well understood and proven technology for collection of groundwater and must be a tool available, along with other engineering controls, for any mine facility design. The Proposed Rule does not specifically rely only on interceptor wells but does recognize interceptor wells as an effective component to any facility design.

For the reasons discussed above, I disagree with the changes to the Proposed Rule regarding waste rock stockpiles suggested in Ms. Travers' direct written testimony and the exhibits presented by the Attorney General.

V. CONCLUSION

In conclusion, I urge the Water Quality Control Commission to adopt the Proposed Rule as presented with the Department's Amended Petition with some minor changes as suggested in Freeport's testimony. This concludes my written rebuttal testimony.


Michael J. Grass