

MEMORANDUM
OFFICE OF THE STATE ENGINEER
Hydrology Bureau

DATE: December 12, 2022

TO: David Otori, Permit Lead, Mining Act Reclamation Program

THROUGH: Katie Zemlick, Ph.D., Hydrology Bureau Chief *KZ*

FROM: Christopher E. Angel, PG, Senior Hydrologist, Hydrology Bureau *CEA*

SUBJECT: Post-Public Hearing Comments on Revision 21-1 to Tyrone Mine, Emma Expansion Project, Permit No. GR010RE, Freeport-McMoRan Tyrone Operations

I. Introduction

The New Mexico Office of the State Engineer (NMOSE) Hydrology Bureau received the Mining and Minerals Division's (MMD's) October 21, 2022, request for review on the subject Post-Public Hearing Tyrone Mine - Emma Project. This review included the May 23, 2022, Freeport-McMoRan – Tyrone Mine Permit GR010RE, Tyrone Mine Emma Expansion Application Response Letter; and post-public hearing comments by Gila Resources Information Project (GRIP) and GRIPs consultant Stratus Environmental and a report by Kuipers and Associates.

**II. Freeport-McMoRan Tyrone Mine Response Letter
May 23, 2022 (Freeport, 2022)**

The NMOSE Hydrology Bureau reviewed the Tyrone Mine Response Letter (Freeport, 2022) for hydrogeologic concerns, including but not limited to NMOSE's comments (Angel, 2022). According to Freeport (2022) the following issues identified in Angel (2022) are in the process of being reconciled:

- 1) Freeport is discussing a variance for the annular seal on the M-10584-POD34 and a corrected well log will be submitted to the NMOSE.
- 2) Freeport is working with the NMOSE on permitting requirements for the MB-44.
- 3) An application is pending with the NMOSE for an alternate point of diversion in the Emma Pit. This application has been submitted the NMOSE Hydrology Bureau for analysis and is part of a protested application. The hydrogeologic evaluation of this application has not been performed at this time.

Based on the information provided in Freeport (2022), NMOSE's original comments were adequately addressed.

Freeport's response to the New Mexico Department of Game and Fish (NMDG&F) on page 7 states that "it is environmentally unsound to backfill the pit to the point that it does not function as a hydraulic sink" and that "[p]umping will be required beyond 100-years" (Freeport, 2022). These statements indicate that water right applications transferred into the Emma Pit will likely need to be evaluated for a 40-year drawdown effects to wells of other ownership and a 100-year effects to surface water bodies.

III. GRIP Comments, Allyson Siwik September 15, 2022 (GRIP, 2022)

Technical consultant Dylan Duvergé, indicates that the report does not present sufficient data to fully understand the presence or strength of the hydrogeologic connection between the mine pit and the nearest domestic wells. In general, the NMOSE Hydrology Bureau analyzes water right applications in a conservative manner. This means that the analysis will likely be performed with a hydrogeologic connection to wells of other ownership unless there is sufficient information to demonstrate otherwise.

GRIP (2022) discusses a water right application for the Emma Pit mine as an additional point of diversion for a 10-year temporary transfer of water from the M-4979 water right. This application is currently protested. In general, the NMOSE Hydrology Bureau evaluates groundwater transfer applications by analyzing the movement of groundwater from one location to the another. This is done in a conservative manner that allows for an evaluation of potential effects to wells of other ownership and/or surface water bodies.

GRIP (2022) recommends that the Tyrone Mine implement a Groundwater Monitoring and Mitigation Plan (GMMP) that includes Lowest Practical Pumping Level (LPPL). The NMOSE Hydrology Bureau generally evaluates LPPLs on wells that exceed the Recommended Drawdown Allowances for Unconfined and Confined Aquifers (OSE, 2017). This evaluation is performed after a water right application is received. The NMOSE Hydrology Bureau has received an application for the temporary transfer of groundwater into the Emma Pit. No evaluation has been performed at this time. As the application is protested, the evaluation will be performed and submitted as part of the administrative litigation process process.

GRIP (2022) recommends that a dust control, monitoring, and mitigation plan be established. If this plan is established and water is needed for dust suppression, the NMOSE District III will need to be contacted to determine if the Tyrone Mine has the appropriate water rights available for this activity. This was documented in Item 4 of the NMOSE Hydrology Bureau memo for the Emma Expansion Project (Angel, 2022).

**IV. Stratus Environmental, Dylan Duvergé,
June 8, 2022 (Duvergé, 2022a)**

The 2-foot drawdown allowance discussed by Duvergé (2022a) was not determined by the NMOSE. At this time, the NMOSE has not evaluated the application and no drawdown allowance has been evaluated. As this application is protested, the evaluation will be performed and submitted as part of the administrative and legal processes.

An evaluation of Cherry Creek and Oak Grove Creek/Wash will likely be performed as part of the water rights application M-4979. If any of the creek intervals are perennially flowing, then a Glover-Balmer Analysis will likely be performed on the flowing interval. The NMOSE Hydrology Bureau generally does not evaluate dry stream reaches.

Duvergé (2022a) discusses the MODFLOW model developed by Daniel B. Stevens and Associates (DBS&A) and questions the model based on the results of predicted MB-44 water level trends. If the applicant is to use a MODFLOW model in the evaluation of the protested application M-4979, then the MODFLOW model files will likely need to be submitted to the NMOSE for a full and detailed review by the NMOSE Hydrology Bureau.

In general, the evaluation of a water right application by the NMOSE Hydrology Bureau uses conservative values including but not limited to transmissivity and storativity. These values are generally determined during the evaluation of the water right applications from multiple data sources.

**V. Stratus Environmental, Dylan Duvergé,
September 6, 2022 (Duvergé, 2022b)**

Duvergé (2022b) indicates that there are two springs that may be affected by application M-4979. These springs are mapped on the USGS topographic map. The NMOSE Hydrology Bureau will likely evaluate the nature of these possible springs as part of M-4979 evaluation.

In Duvergé (2022b), it is stated that “a pit lake cannot be allowed to form”. Pit lakes have been allowed by the NMOSE and generally have a calculated evaporative loss. If a pit lake is not allowed by a different agency for any reason, then the NMOSE Hydrology Bureau will generally evaluate the drawdown effects to wells of other ownership and depletion effects to perennial surface water bodies. It is likely that wells of other ownership will be evaluated for a 40-year analysis (OSE, 2017) and surface waters will be evaluated on a 100-year basis due to the length of time that the pit will need to be pumped as discussed in Freeport (2022).

The statement “Pit dewatering represents an increase in consumptive water use” has not been evaluated by the NMOSE. As this is likely to be evaluated in part by the NMOSE District III and

the NMOSE Hydrology Bureau evaluation process, no determination can be made until that process has been completed.

The statement “Predicted drawdowns are compared to in appropriate thresholds for impairment” is based on the applicant’s evaluation. The NMOSE has not performed an evaluation at this time. The NMOSE Hydrology Bureau utilizes the Guidelines for the Assessment of Drawdown Estimates for Water Right Application Processing (OSE, 2017) and/or any basin specific guidelines for the evaluation of water right applications.

**VI. Kuipers & Associates, LLC, James Kuipers,
September 13, 2022 (Kuipers, 2022)**

NMOSE has no comments on Kuipers (2022).

VII. References

Angel, C. E. (2022); Comments on Revision 21-1 to Tyrone Mine, Emma Expansion Project, Permit N. GR010RE, Freeport-McMoRan Tyrone Operations, February 2, 2022.

Duvergé, D. (2022a); Review of Hydrogeologic Report for Proposed Emma Project, Stratus Environmental, Silver City, NM, September 6, 2022.

Duvergé, D. (2022b); Groundwater Resource Comments for Emma Expansion Project (Permit No. GR010RE, Revision 21-1, Stratus Environmental, Silver City, NM, June 8, 2022.

Freeport (2022); Re: Tyrone Mine Permit GR010RE, Tyrone Mine Emma Expansion Application Response Letter, dated May 23, 2022

GRIP (2022); RE: GR010RE Tyrone Mine – Emma Expansion Project, Gila Resources Information Project, by Allyson Siwik to Jerry Schoeppner, dated September 15, 2022

Kuipers (2022); Re: Technical review Comments on Tyrone Emma Expansion Project Permit Revision Application, Closure/Closeout Plan, and Financial Assurance Cost Estimate, Kuipers & Associates, LLC

OSE, 2017, Guidelines for the Assessment of Drawdown Estimates for Water Right Application Processing: New Mexico Office of the State Engineer Hydrology Bureau Report 05-17, 16 p.