

September 10, 2020

Via email to mary.rasmussen@usda.gov

Mary Rasmussen  
US Forest Service  
Supervisor's Office  
2324E McDowell Road  
Phoenix, AZ 85006-2496

**Subject: Response to Data Request for Reclamation and Closure Plan Clarifications**

Dear Ms. Rasmussen,

In response to Tonto National Forest's letter dated September 1, 2020 regarding Resolution Copper's Draft Reclamation and Closure Plan clarifications, please see Resolution Copper's responses below.

Should you have any questions or require further information, please contact me.

Sincerely,



Vicky Peacey,

Senior Manager, Permitting and Approvals; Resolution Copper Company, as Manager of Resolution Copper Mining, LLC

Enclosure(s):

**Resolution Copper Response to Tonto National Forest request for clarifications on the Draft Reclamation and Closure plan**

**RCL-1. Post-Mine Land Use.** The BGC review generally found that the KCB plan is acceptable for the current stage of planning and for analysis in the FEIS. However, a number of recommendations are made for future additions and clarifications. Many of these recommendations are appropriate to address in later versions of the plan. However, several were identified that need clarification prior to completion of the FEIS.

Defining post-closure land use is a necessary first step to defining reclamation and closure objectives. BGC identified inconsistencies in the post-mining land uses, and we request clarification on this issue (see p. 4 of BGC memo). The specific issue is the compatibility of recreation and public access with maintenance and function of the closed tailings structure:

- The KCB tailings reclamation plan identifies low-impact livestock grazing and wildlife habitat as desired post-mine tailings land uses (p. 16).
- The Tetra Tech site-wide reclamation plan identifies wildlife habitat and grazing, recreation and access as desired post-mine tailings land uses (p. 24).

**Response:** *The final post mining land use of the TSF will be determined in conjunction with the landowner, which is currently Resolution Copper, as stated. It may be advisable to limit recreation and access to the TSF during near term closure. In the very long term, recreation and access may be appropriate uses. Note that the access as described is for access beyond the facilities, and not to them. Recreation would only be allowed where safety and erosion control can be maintained.*

**RCL-2. Two Specific Failure Modes.** BGC also considered the results of the FMEA workshop from February 2020 when reviewing the KCB tailings plan. BGC identified two potential failure modes (No. N-2 and No. N-5 in Gannett Fleming, 2020) for which the reclamation and closure plans have ramifications. Whereas many potential failure modes decrease in risk after closure, both potential failure modes have risks that may increase after closure.

- Potential failure mode N-2 involves a slope instability through the foundation at the tailings main embankment due to high porewater pressures. For this failure mode, the FMEA noted that a backup of water behind the cutoff wall located just downstream of the tailings main embankment could accumulate once shallow pumping wells are turned off. As a result, the FMEA identified a potential need to remove the cutoff wall at the time of closure. Additional details are requested on how this would be accomplished, and the estimated point in time it would take place.
- Potential failure mode No. N-5 involves a slope instability through the foundation at the tailings main embankment due to geochemical changes in the foundation over time. The FMEA identified that this is a potentially long-term,

gradually developing failure mode. As the geochemical reactions can take a long time to develop, the FMEA identified a potential need to continue to monitor water quality specifically for this risk during the post-closure period. The KCB plan does include water quality monitoring to confirm stable trends during the passive-care phases of post-closure. However, it does not specifically include or discuss monitoring for this potential failure mode, which may need to include post-closure monitoring performance of the facility underdrainage system. Additional details are requested on whether, and how, this monitoring would be performed.

**Response:**

**N-2:** *The top of grout curtain or cut-off would be at an elevation such that it would not pose a risk to the Main Embankment (via increased phreatic surface). Regardless, it would be removed for long-term, post-closure when it is no longer required to return the stream similar to the pre-mine condition. The final design and closure configuration will be subject to an approved Aquifer Protection Permit (APP) issued by ADEQ with regular model updates over the life of the operation through closure. The final tailings facility design, construction schedule, ultimate configuration, closure, and post closure approach would be determined by that agency.*

**N-5:** *Geochemical properties of the foundation and expected seepage water quality indicate that the foundation is very unlikely to degrade to low strength material, and the embankment slope could be flattened if there was a risk of low strength layers in the foundation forming. Resolution would confirm that this is not a risk during construction and may incorporate periodic site investigations in the long-term to confirm.*

*Geochemical properties of the scavenger tailings, cycloned sand, and underdrain material indicate that it is very unlikely to undergo geochemical reactions that would clog the underdrains. However Resolution Copper may incorporate water quantity and quality monitoring of the underdrainage system at closure and post closure to confirm the performance of the underdrainage system.*

**RCL-3. Other Recommendations.** We do not anticipate direct responses to other recommendations in the BGC memo, or submittal of a revised plan. However, if additional clarifications or information are available, they will be considered and incorporated into the FEIS analysis.

**Response:** *Noted. Resolution will meet with regulatory agencies and develop individual reclamation closure plans for facilities under their jurisdiction at the appropriate permitting stage.*

**RCL-4. Passive Treatment Options.** A suggestion was raised during discussions with other agencies that there may be an opportunity for passive treatment of collected seepage using downstream wetlands, rather than pumping back to the reclaimed water pond (while available) or evaporation. We request clarification if this type of treatment is feasible and effective for removing the contaminants anticipated in the seepage, and if so, whether this option would be considered as part of future treatment options.

**Response:** *There may be opportunities for passive treatment and the approach could be considered in the future. However, the likely limitation to this approach is the depth to groundwater and the expected*

*depth of seepage. Currently, groundwater is encountered at depths of great than 70 feet in the alluvium downstream from the TSF. Wetlands would need much shallower groundwater to become established and be effective at treatment. Even with addition of seepage, groundwater levels downstream from the TSF are not expected to rise significantly. Other passive methods may be worth considering, particularly in the future as passive treatment methods improve.*

**RCL-5. Post-Closure Monitoring and Management Plan.** Internal Forest review noted that a detailed post-closure monitoring and management plan—similar to the Operational Maintenance and Surveillance (OMS) plan—would be necessary to fully understand the

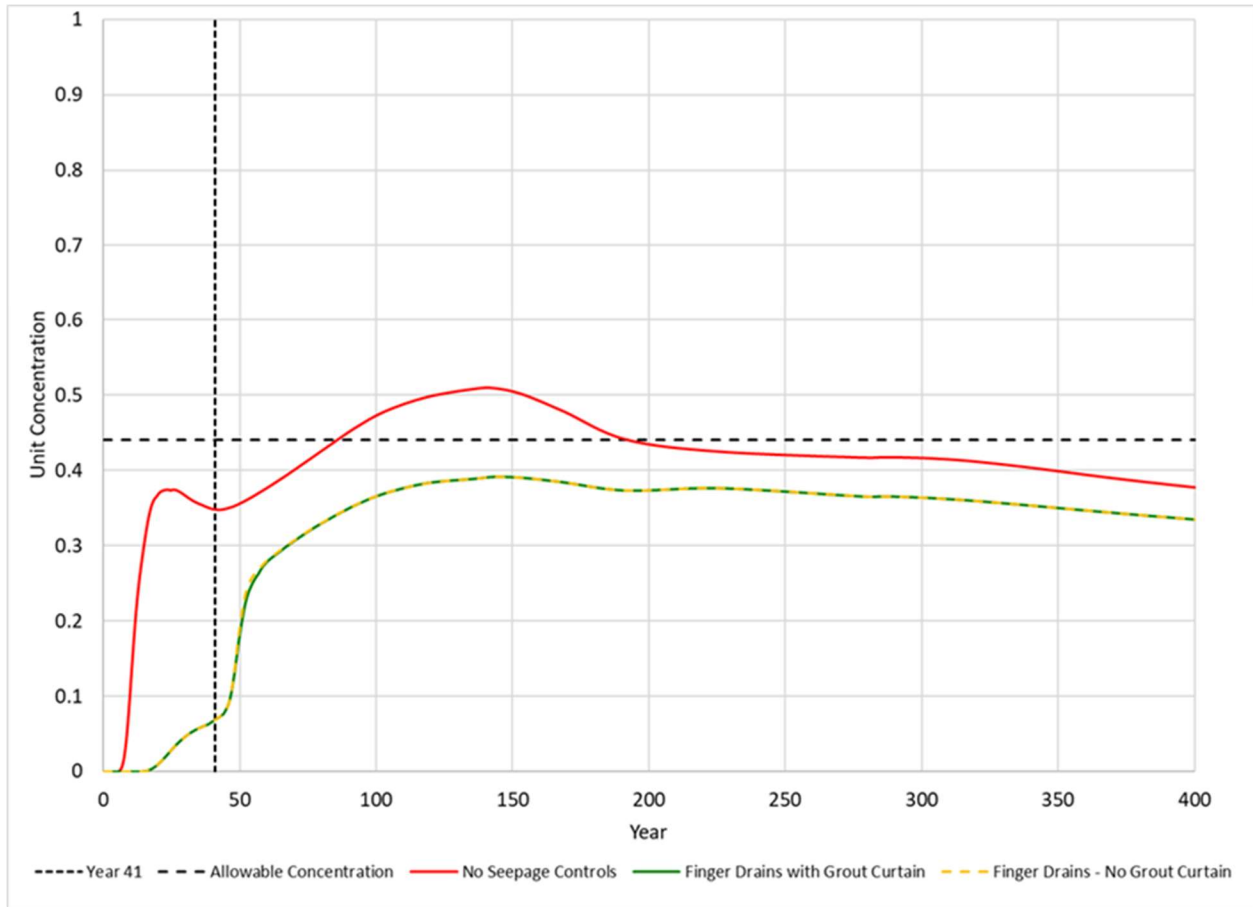
post-closure reclamation risks and likelihood of success. We concluded that such a plan would also be helpful for informing the upcoming permitting efforts with the Forest and ADEQ (APP permit). We acknowledge the monitoring concepts that are included in Section 11 of the KCB reclamation plan. Clarification is requested of when in the process these monitoring details would be explicitly described and committed to, and whether they will be prepared as part of the upcoming Forest Service or ADEQ permitting process.

**Response:** *Resolution Copper will discuss with ADEQ when developing the APP application.*

**RCL-6. Specific Post-Closure Impact Analysis.** Related to potential failure mode N-2, a specific concern raised during the final water resources workgroup meeting (July 30) was the impact to downgradient groundwater quality if and when the grout wall is removed, i.e., downgradient release of poor-quality groundwater. We intend to analyze this impact in Section of the FEIS. To do so:

- We feel adequate information exists to estimate to groundwater quality at this location at the point in time the grout curtain is breached. Specifically, Appendix B of the July 2020 Montgomery & Associates modeling report includes concentrations of contaminants at years 41, 143, and 441, at varying distances downstream from the main embankment.
- We are seeking input on the best way to estimate the transport of this groundwater when the grout curtain is breached, and specifically whether the groundwater model can be used to estimate this scenario.

**Response:** *The plot below shows predicted unit concentrations with the grout curtain and without the grout curtain. Concentrations without the grout curtain are only slightly different from those with the grout curtain. This is primarily because the alluvial pumpback wells prevent a significant buildup of heads in front of the dam in both scenarios. If the grout curtain was removed post closure, it would not be expected to have a significant impact on predicted concentrations.*



**RCL-7. Reclamation and Closure Plan Updates.** BGC notes that typical industry and regulatory practice is to update closure plans every three to five years. During discussion of the plans, the Forest and other agencies agreed on the necessity of these updates, and in particular the usefulness for such updates to inform upcoming permitting processes (USFS, ASLD, and ADEQ). Clarification is requested on whether periodic updates of the reclamation and closure plans is part of Resolution Copper’s corporate practice, and the anticipated schedule for these updates.

**Response:** *Resolution Copper will update the plans when needed as required by the individual regulatory authorities, along with a recalculation of the bond amount as stated in Section 8.1 of the Draft Reclamation Plan (pg. 65).*