

AUG 16 1990

URFO:ROG  
Docket No. 40-8907  
040089071700

UNC Mining and Milling  
ATTN: Juan R. Velasquez  
1700 Louisiana Blvd. NE, Suite 230  
Albuquerque, New Mexico 87110

Gentlemen:

Based on our meetings with you and your consultants on July 27, 1990, and August 1, 1990, we have revised three of our questions regarding your proposed site reclamation plan, included in our letter to you dated June 29, 1990. Specifically, we have revised questions 9, 10, and 11. The other questions included in our June 29 letter do not require revision.

In summary, we have concluded that those parts of your proposed reclamation plan relative to the Pipeline Arroyo will not provide reasonable assurance that radiological hazards will be controlled for the project design life, and are therefore unacceptable. The specific areas that do not meet the requirements are your proposed designs for the upper and lower sections of the Pipeline Arroyo as currently designed. You are required to revise these parts of your design to address the identified deficiencies, or provide alternative designs. Following receipt of your responses to the other questions contained in our June 29 letter, we will proceed to complete our review of the balance of your reclamation plan while the issues concerning Pipeline Arroyo are resolved such that you may proceed with reclamation of your tailings pile and decommissioning of your mill.

PM:URFO *[Signature]*  
RGonzales/lv  
08/16/90

PM:URFO *[Signature]*  
JGrimm  
08/16/90

PM:URFO *[Signature]*  
PGarcia  
08/16/90

DD:URFO *[Signature]*  
EHawkins  
08/16/90

D:URFO:RIV *[Signature]*  
REhall  
08/16/90

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UNC Church Rock

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In our June 29, 1990, letter, we requested responses by August 17, 1990. After you have reviewed the enclosed comments, please contact us so that a response date can be established for questions 9, 10, and 11.

Sincerely,

*Original Signed By:*

**R. E. HALL**

Ramon E. Hall  
Director

Enclosure:  
Revised Comments on  
UNC Church Rock Reclamation Plan

bcc:

PDR/DCS

URFO r/f

ABBeach, RIV

LLO Branch, LLWM

RGonzales

Joel Grimm

RCPD, NM

EID, NM

Revised Comments on  
UNC Church Rock Reclamation Plan

Question Nos. 9 and 10 may be more appropriately combined with separate emphasis placed on stability analyses upstream and downstream of the Pipeline Arroyo nickpoint. For the sake of clarity, we have prefaced our comments for each area by a brief discussion of the issues.

9., 10. The following comments supersede question Nos. 9 and 10 in NRC comments dated June 29, 1990.

The main concern, voiced in the July 27, 1990 meeting was that lowering the resistant nickpoint in the arroyo would steepen the channel gradient and induce incision and gullyng upstream. Having a valley gradient as low as 0.002 under natural conditions, we were concerned that the proposed increase in the channel gradient to as high as 0.009 would result in instability of the entire valley. Our reviews, and meetings with UNC consultants, have modified that position.

We have now concluded that excavating and steepening the channel to a gradient of 0.009 will not likely result in channel incision. However, the arroyo as designed is still likely to have deleterious effects on site stability. The likely problems are itemized as follows:

- a) As shown on the most recent version of design drawings, the channel gradient upstream of the nickpoint would be 0.008, resulting in a channel elevation of 6959 feet near the northern property boundary. The floodplain elevation here appears to lie at an elevation between 6970 and 6975 feet. You have not demonstrated how this vertical transition from floodplain to reconfigured channel will be accomplished in only a 500-foot distance (a gradient near 0.03), without producing erosive flow velocities. Thus, for the proposed design, the potential for channel scour and failure of the channel at the very head of the reconfigured reach is high.

For this reason, the proposed design for this area of the reconfigured channel is unacceptable. You are therefore required to provide reasonable assurance that the channel in this reach and downstream toward the tailings pile will remain stable. As proposed, the design will need to be modified to provide acceptable erosion resistant bed and bank materials in this location. Alternately, the design may be revised in some other way to accommodate the gradient and gradient changes in the arroyo.

- b) Except for the resistant bedrock nickpoint, the reconfigured arroyo is proposed to be constructed with 3:1 side slopes. According to information in the proposed reclamation plan, most of the alluvium



forming the banks of the arroyo is sandy in composition. As a result, the banks of reconfigured Pipeline Arroyo would likely be unstable under all flow conditions. The 0.33 gradient banks are near or exceed their angle of repose, and are likely to fail simply due to gravitational forces. In excess of the lateral erosion predicted by the Yang method, ordinary flow in the arroyo will erode the toe of the banks, inducing bank failure and progressive, random changes in the channel pattern and width. These steep banks would also likely be eroded by runoff from above the banks as well as direct rainfall.

Accordingly, the unprotected, 3:1 side slopes for the reconfigured Pipeline Arroyo are unacceptable. You have not provided reasonable assurance that lateral widening predicted in your calculations is the only erosional process from which the tailings embankment should be protected. The proposed design must therefore be modified to provide acceptable erosion resistant bed and bank material. Alternately, you may revise your design to prevent progressive bank failure, channel-pattern changes, and channel migration.

- c) As proposed, the southwestern end of the tailings pile would be separated from the arroyo by an area referred to as a sacrificial slope. At the broadest area, the slope would separate the tailings embankment from the arroyo by approximately 400 feet, while the most common separation would be about 380 feet. The gradient on this slope would exceed 0.07 in some places. An unprotected soil slope this steep is likely to become rilled and gullied in a relatively short period of time.

Considering also the instability likely in Pipeline Arroyo, this proposed aspect of the design is unacceptable. It is our position that neither the slope distance nor the sacrificial volume provide reasonable assurance that the tailings embankment will be protected from erosion during the performance period. Therefore, for the proposed design these slopes also require placement of acceptable erosion resistant material. Alternatively, the design could be altered in other ways to prevent erosion that would adversely impact the tailings pile.

11. The following comment supersedes question No. 11 in NRC comments dated June 24, 1990.

On pages 38-39 of your reclamation plan, you provided the results of durability tests performed on two samples of Todilto limestone. Using the acceptance criteria in NUREG/CR-4920, you concluded that the limestone is acceptable for use as riprap. We agree with your conclusion. However, you have not provided minimum durability requirements and gradation

specifications. Before we can determine the acceptability of your rock source, you must either provide durability and gradation specifications to be used for the riprap or you may commit to meeting the criteria of Appendix D of the NRC's technical position on Design of Erosion Protection Covers (a copy of this position was provided to you in our June 29, 1990, letter). In addition, please provide details of the frequency at which durability and gradation testing will be performed. The testing frequency should be consistent with the NRC Staff Technical Position on Testing and Inspection, or justification provided for your proposed testing frequency.