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ACT/043/008

June 22, 1987

TO: Technical File

FROM: Rick P. Summers, Reclamation Hydrologist

RE: Review of Abatement Submittal for N87-15-2-3, Summit Coal Company, Boyer Mine, ACT/043/008, Summit Co., Utah

Summary: The above referenced plans (received June 17, 1987) were reviewed relative to hydrologic concerns required for NOV abatement on June 17 and 19, 1987. The submittal also contained information required by permit stipulations. That information was not reviewed at this time due to workload priorities. Essentially, the NOV required plans to be submitted demonstrating the sediment pond is in compliance with UMC 817.46. Plans for the emergency spillway were found to be adequate and approvable at this time. Designs for the energy dissipation structure (required by UMC 817.47) were found to be deficient. It is suggested that conditional approval be given for the proposal and the NOV terminated following construction of the emergency spillway. Designs for the energy dissipation structure should be submitted, approved, and implemented prior to July 19, 1987. The Division feels that the additional time to develop the energy dissipator designs more fully is warranted based upon:

1. Probability theory calculations demonstrate the probability of a 25 yr event occurring within a 1 month period to be less than 1/2 of a percent (0.34%).

2. The technical analysis of the sediment pond conducted on April 19, 1987 demonstrated the pond is capable of containing (below the primary spillway elevation) the 100 yr, 24 hr precipitation event.

3. The NOV abatement and UMC 817.42 (a)(5) require that the sedimentation pond comply with UMC 817.46 prior to resumption of mining activities. Energy dissipators are implied in UMC 817.46, but are specifically regulated under UMC 817.47.

4. The pond has been installed on site since 1985 and to date no discharge through the emergency spillway has occurred.

5. UMC 817.46 (i) requires that an "...appropriate combination of principle and emergency spillways shall be provided...". The primary spillway is capable of discharging the 100 yr, 24 hr event (i.e. no flow through the emergency spillway will occur). In summary, the Division feels that the proposed spillway is approvable at this time and the energy dissipator design can be finalized and submitted to the Division for approval.

Body: The technical review for the emergency spillway is attached to this memo. It should be noted that a rigorous analysis of the spillway was not conducted due the the conservative design of the entire pond (i.e. based on a 100 yr, 24 hr event) and time constraints for the review. The proposed designs for the energy dissipator were reviewed and the following deficiencies were noted:

1. Plate 7-2 depicts a concrete stilling basin and Figure 7-1a proposes a loose rock check dam. The proposal is vague as to the proposed location of the structure. Cross-section A-A' depicts approximately 20 ft. from the outlet of the primary spillway and the roadside diversion. If the loose rock dam is to be placed to allow for the 15 ft. rock apron, the 30 in. dam will be located less than 5 ft. from the outlet. The backwater effect from the dam could cause the spillway to function under outlet flow conditions.

2. The proposal should include information for the expected velocity from the primary spillway flowing at maximum capacity. The energy dissipator should be designed using the worst case velocity (i.e. emergency spillway at design flow or primary spillway at maximum capacity).

3. The proposal uses a 30.0 % (3.33 : 1) slope for the calculation of the expected velocity from the emergency spillway. Plate 7-2 depicts the maximum slope as 67.7 % (1 1/2 : 1) and the slope entering the dissipator as 43 % (2.33 : 1).

4. The applicant should submit the information used to determine the 6-24 inch rock proposed for the dam.

5. The proposal should include the proposed size of riprap to be used for the rock apron (including determination information).

6. The proposal should include specific dimensions for the entire structure. These should include: 1) length, width and depth of basin, 2) width of loose rock check dam.

7. The specification for the loose rock dam requires that riprap protection be placed for the length of the apron and two feet above the gabion crest. Is this design feasible on site without excessive excavation?

8. The specification requires an adverse slope for the energy dissipator apron over the 15 ft. length. Again, it appears this design would require excessive excavation to install.

9. The proposal should demonstrate the discharge from the spillway will safely (i.e. without erosive velocities) discharge into the confluence of the spillway and the roadside diversion.

cc: L. P. Braxton
Sue Linner
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