



March 7, 1984

Mr. Allen Childs, Engineer  
Diamond Shamrock Coal Unit  
P. O. Box 551  
Orangeville, Utah 84537

RE: NOV N84-4-2-1 Abatement Plans  
Culvert Inlet Structure  
Cottonwood Creek (Riprap)  
Trail Mountain Mine  
ACT/015/009, Folder Nos. 3 & 7  
Emery County, Utah

Dear Allen:

The Division has completed its review of the abatement plans submitted by Natomas Trail Mountain Coal Company pursuant to NOV N84-4-2-1. The plans involve an "as built" culvert inlet design change which has been implemented at the minesite. The "as-built" design is contrary to the previously approved design plans for the inlet structure.

As a result of the review of this submittal, the plans are deficient in the following areas:

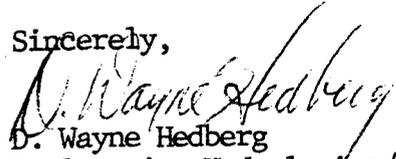
1. The size of the culvert as installed is somewhat questionable. There is a discrepancy between the cover letter (February 9, 1984) and the map in the original (April 11, 1983) submittal (66 inch CMP) and the drawings submitted with the February 9, 1984 plans (i.e., 96 inch CMP). Please clarify which sizing details are appropriate.
2. The calculations for the expected channel velocity must be revised. It appears that the value of eight fps erroneously taken from Table 7-8 of the April 11, 1984 submittal was calculated for the diversion ditch with a peak of 20.1 cfs. Cottonwood Creek has an estimated peak flow of over 500 cfs which will result in substantially larger velocities.
3. Plans are needed depicting the extent of riprap along the channel and up the banks and above the concrete headwall. Also, channel cross sections (with riprap in place) immediately upstream of inlet (i.e., @ 40 feet) used in generating the revised velocity calculations must be submitted.
4. The cover letter (February 9, 1984) states that the concrete headwall is installed as shown on drawings, yet no drawings submitted depict the height of this headwall. This should be clearly shown on the drawings.

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5. Plans must be certified by a registered professional engineer as required by UMC 784.23(e).
6. Demonstration of the method used to determine that no filter blanket is required (i.e., criteria limits and/or literature source). The reviewer is only familiar with methodology using  $d_{85}$ ,  $d_{50}$  and  $d_{15}$  of the particle size distribution. The applicant has submitted  $d_{60}$ ,  $d_{34}$  and  $d_6$  with no explanation of the rationale that these sizes are stable and not subject to interstitial scour and erosion.
7. Clarification of the depth of riprap in the channel is needed. The cover letter (February 9, 1984) states the depth of riprap is 1.5 times the largest stone diameter. Since this diameter is 10 feet, then the riprap is to be 15 feet in depth. Is this correct?
8. The trash rack design is inadequate. The proposed installation of the rack perpendicular and flush to the culvert inlet results in unpredictable hydraulics at the inlet and extremely difficult maintenance during peak emergency flows. Rule of thumb states the surface area of the rack should be 10 times the end area of the culvert. The original design by Vaughn Hansen Associates (April 11, 1983 submittal) had allowed for these factors with the "box-type" design placed upstream from the culvert face. Why wasn't this approved design installed? At a minimum, the rack should be increased in size and angled out from the culvert inlet. Also, plans for culvert maintenance and cleaning of the trash rack during high flows must be submitted. These should include a commitment for inspection during high flows, the equipment available on-site to be used in trash rack cleaning and disposal of debris removed.

Should you have any questions, please contact me or Rick Summers of the technical staff.

Sincerely,

  
D. Wayne Hedberg  
Reclamation Hydrologist/  
Special Permits Supervisor

DWH/RS:btb

cc: Allen Klein, OSM, Denver  
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