



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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October 2, 1990

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Tom Munson, Senior Reclamation Hydrologist 

RE: Bear Canyon Culvert Extension, CO-OP Mining Company, Bear Canyon Mine, ACT/015/025-90F, Folder #2, Emery County, Utah

## Synopsis

On July 2, 1990, the Division received a request for a culvert extension from CO-OP Mining Company for Bear Creek. On September 25, 1990, the second request to extend the 60 inch culvert was received. This memo reviews this request.

## Analysis

The following items have not been addressed and will need to be addressed prior to permit approval of the culvert extension.

- 1) An appropriate series of surveyed cross sections showing fill and culvert in relation to existing channel using cross-sections spaced at 100 foot intervals.
- 2) A longitudinal profile of the existing channel and the installed culvert to verify slope using an exaggerated vertical scale of one inch equal 10 feet. All drawings should be submitted on engineering paper with the appropriate grid. Plate 7-1 is also not on an adequate topographic map to show culvert location.
- 3) The berm and culvert has created a situation where Bear Creek is no longer intercepting surface runoff from the hillside on the East side of Bear Creek. The plan must show watershed area and hydrologic designs for diversion D-12U which demonstrates it is adequate to handle this additional runoff.

- 4) The reclamation plan for Bear Creek is inadequate and requires all the hydraulic information necessary to verify cross sections, longitudinal profiles, riprap designs. The combination of channel, bank, and flood plain configuration will be adequate to pass safely the peak runoff of a 100-year, 6-hour precipitation event. The design capacity of channels for permanent stream channel diversions will be at least equal to the capacity of the unmodified stream channel immediately upstream and downstream from the diversion, if appropriate. The design will also include the premining characteristics of the original stream channel, including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat.
- 5) The length of Bear Creek between the proposed culvert and the existing culvert must be culverted to prevent migration of windborne coal fines and other contaminants from reaching the creek. Although this is not proposed in the current plan, it seems appropriate to prevent additional contributions of suspended sediments from entering the creek.
- 6) Under rule 742.314, the Division may specify additional design criteria for diversions to meet the requirements of R614-301-742.300. This relates to the need to have an adequately sized channel to handle peak flows following reclamation and provides the latitude allowing the Division to ask for more extreme designs based on larger storm events (i.e. 100 year-24 hour event). The operator needs to explore all options in their reclamation plan, convincing the division that the reclamation plan for Bear Creek is adequate.

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