



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Norman H. Bangert  
Governor

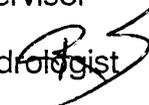
Dee C. Hansen  
Executive Director

Dianne R. Nielson, Ph.D.  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340

December 3, 1992

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**TO:** Daron Haddock, Permit Supervisor  
**FROM:** Rick P. Summers, Senior Hydrologist   
**RE:** Waste Rock Diversion Designs (Received 11/9/92), Utah Fuel Company, Skyline Mine, ACT/007/005, Folder #2, Carbon County, Utah

## Summary

The calculations for the peak flows used as the basis for the diversion designs have been determined to be in error. The peak flows presented in the submittal differ as much as 1/5 of the flows calculated by the Division. It appears as if the applicant used a standard methodology (TR-55), but exceeded some basic assumptions of the method. This is most obvious in the calculation of the time of concentration. For example, for diversion DU-5, the applicant calculated a  $t_c$  of 5.35 hours and a peak flow of 18.75 cfs. Division calculations resulted in a  $t_c$  of 0.4305 hours and a peak flow of 60.55 cfs. Discrepancies in flow values for smaller watersheds were not as significant.

Some diversions have high design velocities (e.g. UDD-2 and SW-10), yet no channel stability designs were submitted (riprap). The section needs to reference maps that were used to determine the watershed characteristics (area, slope), diversion locations, and diversion slopes. Division reference materials indicate a Manning's "n" value of 0.035 for an unlined diversion may be considered to be too high, an "n" value on the order of 0.025 may be more appropriate.

Due to these deficiencies, a complete review of the submittal was not conducted at this time. The operator is encouraged to contact me to discuss these problems during the preparation of a resubmittal.

## Recommendation

It is recommended that this amendment be denied pending resolution of these deficiencies.

jbe  
cc: P. Burton  
S. Demczak  
SKYDIV.RS