



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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October 15, 1993

TO: File

THROUGH: Daron Haddock, Permit Supervisor

FROM: Sharon Falvey, Senior Reclamation Hydrologist *SA*

RE: Waste Rock Ditch Designs, D.O. 92E Round 3, Utah Fuel Company, Skyline Mine, ACT/007/005, Folder #2, Carbon County, Utah

SUMMARY:

The operator submitted information applicable to D.O. 92E on November 1992 and January 29, 1993. The most recent submittal received on July 1993 was submitted to address the deficiency memo dated March 31, 1993. The completed amendment includes changes to additional ditch designs which are not required to satisfy the Division Order.

ANALYSIS:

Original Deficiency

1. **Provide the description for which Manning's "n" is based within the design calculations. Provide a source reference. Note: a velocity considered non erosive in a specific substrate should also have a reference cited.**

Proposal:

The operator states the Ditch UDD-2 is not to be riprapped. It is cut into smooth and uniform rock as shown by the Manning's coefficient on page 7.

The operator indicates that swale SW-10 is concrete lined on sec.14 p.11.

Analysis:

The operator has made the statement regarding UDD-2 in the text of the memo but, has not provided the description in the designs. The use of the Manning's n value (0.035) does not, in it's self, describe what material is located on site. Other materials may result in the same roughness coefficient.

The operator has included a reference for erodible ditches as determined from Table 3.2 of Applied Hydrology and Sedimentary for Disturbed areas -1985 ed. The operator has incorrectly stated the name of the reference and should supply a complete



reference when making a citation.

The operator should also include the description of the material and the limiting velocities that apply specific to the applicable design.

Remaining Deficiency:

1. The operator must provide a description of the channel base material in the design information. This could be included on the drawing of the ditch. Sec.14 p.9.
2. The operator should provide a complete reference for erosive velocities cited in Section 14 Introduction. The earthen materials and appropriate limiting velocity should be identified in the design calculation.

Original Deficiency

2. The operator does not provide ditch sizing according to the maximum and minimum slope. The operator should provide ditch depth design based on the minimum slope and velocity determination based on the maximum slope. The operator should note the field conditions must be represented in the design. (The previous field measurement for channel slope was documented as 0.03 ft/ft for DU-5).

Proposal:

Minimum and Maximum slope was not addressed in this submittal.

The design for DU-5 on pages 1 through 6 should be removed. The correct design for DU-5 is found on pages 62 through 67.

The operator uses an "n" of 0.04 in this section. The value used corresponds to the bedrock shown in the drawing.

Analysis:

In removing pages 1 through 6 the operator has removed the previous ditch designs which were shown to be trapezoidal in shape. The present design shows the ditch to be triangular in shape and placed adjacent to the road. The recent waste rock site submittal shows a "UD-5" to be in a flat area and away from the road. A trapezoid is generally a preferred design in such an area. The operator should be aware of potential conflicts with these designs and the new proposal.

In a meeting with the operator it was indicated that the ditches are given a new label if the grade is not uniform.

Therefore, the grade for this ditch should be uniform under field conditions.

3. The operator uses CN of 55 for the area containing conifers. This CN is used for areas which are not grazed and have brush and litter adequate to cover over the soil. The plan contains no vegetation data for this community type near the waste rock site which would provide information to support the stated condition. It is understood that Mr. Shriver did visit the site. However, some grazing does occur in the surrounding watershed. This CN should be adjusted for the state of the vegetation during periods of grazing. A site visit will be used to determine if the presented conditions exist. The operator should recognize the conditions do change over the season/year (especially during grazing) and adjust the CN accordingly.

Proposal:

The CN of 55 for the area containing conifers is adequate.

Analysis:

At the request of the operator the Division performed a site visit to determine the adequacy of the CN for the area containing conifers. At the time of that site visit the Division agreed the CN was reasonable. However, conditions could change if the area is heavily grazed in the future.

RECOMMENDATION

Because the operator has provided different submittals with various replacement pages it is recommended the operator resubmit the full document with all applicable pages for insertion into the MRP. Upon receipt of the resubmitted amendment and the following information this amendment could be approved.

1. The operator must provide a description of the channel base material in the design information. This could be included on the drawing of the ditches. Sec.14 p.9.
2. The operator should provide a complete reference for erosive velocities in Section 14's Introduction. The earthen materials and appropriate limiting velocity should be identified for each applicable design calculation.

The operator should be aware of the conflict with changes in the new waste rock design proposal so, the re-submitted waste rock submittal and designs information correspond.