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

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TO: Internal File

FROM: Dana Dean, P.E., Reclamation Specialist

RE: Sedimentation Pond Calculations, Lodestar Energy, Inc. Horizon Mine, C/007/020-AM02C

SUMMARY:

In March 2002 the Horizon Mine was issued a Notice of Violation (NOV) for discharging water that exceeded the daily maximum allowance of total suspended solids (TSS) from the mine into Jewkes creek. On May 22, 2002 the Division received an amendment proposing to discharge mine water to the sedimentation pond in the case of emergency. This would allow water with high levels of suspended solids to be held for a sufficient period of time so that the effluent would meet permit limitations.

TECHNICAL ANAYLSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Sedimentation ponds

There is one sedimentation pond at the Horizon mine which will function individually. It is located in the southwest corner of the disturbed area. The amendment states that the total pond capacity is 2.95 acre-feet, with a sediment storage capacity of 1.65 acre-feet. The 60% sediment clean-out volume is 0.99 acre-feet.

The operator has presented two different Sedcad analyses of the pond. The first is an as-built calculation done by EarthFax to demonstrate that the pond can hold the 10 yr, 24 hour event of 1.11 acre-feet. The second was performed by Summit Engineering to demonstrate that the pond can hold the design event, plus 750 gpm from the mine.

The as-built calculations are sufficient to demonstrate that the pond can hold the design event safely.

However, the calculation to prove that mine water can also be held is not sufficient. No discussion of sediment from the design event is provided; the calculation is based on water volumes only. This calculation also uses a total runoff volume of 0.76 acre-feet of water, which is different than the 1.11 acre-feet mentioned in the text on page 7-59 (clean copy) and the first calculation.

Assuming the 0.76 acre-feet is correct, the information provided shows that the pond will have a detention time of less than 4 hours for the mine water. The operator must show that this is a sufficient amount of time to meet UPDES and 40 CFR Part 343 limitations.

No mention is made as to how long the mine will be discharging into the sedimentation pond. The worst-case scenario must be considered. If the mine is discharging continuously at 750 gpm in the hours leading up to the design storm, the pond will remain full at discharge level. The storm volume will increase discharge. Adequate detention must be demonstrated for the sediment type.

Findings:

The information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the operator must provide the following in accordance with:

R645-301-742.220, The operator will clearly demonstrate that the sedimentation pond can hold the water and sediment volume from the 10-year 24 hour storm and the 750 gpm mine discharge, providing adequate detention time to allow the effluent from the pond to meet Utah and federal effluent limitations.