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DIVISION OF OIL
GAS & MINING

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Golden Eagle/Cliff Subsidence
Monitoring and Mitigation Plan

Cottonwood Mine

#2

DRAFT

Cottonwood/Wilberg #3

AC 10/15/019

The effects of cliff subsidence on local populations of birds of prey is not well documented. Longwall mining techniques proposed by Utah Power and Light (UP&L) at their Cottonwood Mine will cause subsidence of cliffs supporting several nests for two pair of golden eagles. Under provisions of the Eagle Protection Act (16 U.S.C. 668-668d), disturbance to golden eagles, their eggs or nests is prohibited. Additionally, all raptor nests are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-718). Although the Fish and Wildlife Service (FWS) can permit "take" of golden eagle nests when deemed compatible with the preservation of the species, mitigating losses of nest sites that may directly affect annual reproduction or the long term viability of breeding pairs are not supportable. Insofar as this issue is not well understood, UP&L, as a condition for obtaining a mining permit, must complete a monitoring plan to determine the effects of subsidence on cliff faces and responses of golden eagles to nest losses, if any occur. In keeping with FWS policy on maintenance of local golden eagle populations, UP&L will commit as part of the plan to mitigate any nest site impacts that may be realized.

This monitoring plan is subject to the condition that UP&L obtain a permit(s) to "take" the subject nest(s). If a permit is granted, it would not relieve UP&L of its obligations under the Eagle Protection Act in regard to protecting active nests. Should escarpments fail resulting in the loss of birds or eggs, UP&L will still be subject to the penalties of this Act.

Plan Objectives

1. Determine impacts of subsidence on nests and nesting success for cliff nesting raptors.
2. Mitigate impacts due to subsidence.

Schedule/Methods

Monitoring should be conducted by a helicopter and observer(s) from FWS using techniques similar to surveys completed by FWS in 1981 or other techniques approved by FWS. Similar to 1981, surveys will be completed by flying in close proximity to all suitable cliff nest sites at a speed and proximity that golden eagle and prairie falcon aeries are observable. All raptor nests observed will be recorded. All potential cliff sites will be checked for nests of golden eagles and prairie falcons throughout the survey area (Map 1) in early spring of each year. Surveys

will begin in early morning and will terminate when weather prevents further flight or the study area has been completely examined. The entire area shown on the attached map will be flown annually to document golden eagle relative productivity and changes in territories. The monitoring area boundaries were selected to include all the drainage containing the mine operations so as to include additional pairs of eagles for comparison with the nests affected by the mining operations.

A follow-up aerial survey of much shorter duration will concentrate on rechecking breeding success at active nests within the study area. Monitoring efforts should begin in 1986 and continue through 1990.

The monitoring schedule assumes that mining will be completed as mapped in the permit application and that the majority of subsidence will take place within 2 years of mining. If delays occur, the schedule will be extended to include two post mining years. Likewise, costs will also need to be adjusted. Significant subsidence could occur after the planned monitoring period. Needs for additional monitoring cannot be determined at this time but will be dictated by the results of subsidence monitoring.

The feasibility and desirability of monitoring active nests by remote video camera will be given further consideration. This would require acquisition and installation of appropriate equipment.

Subsidence monitoring will be primarily the responsibility of UP&L. UP&L is required to determine the following data on cliff subsidence: amount of subsidence, time of subsidence, percent spalling of cliff face, change in tilt of cliff faces, mechanics of subsidence and long term stability of resultant cliffs. These should be mostly obtainable through normal monitoring activities. Annual reports of subsidence will be provided to FWS. In addition, special equipment or technology may be required, as determined by UP&L, to detect or measure when significant earth movement occurs in the nest bearing strata relative to the travel of the longwall. UP&L will report to FWS in a timely manner when significant subsidence events are predicted to begin to impact the nest bearing strata. Subsidence monitoring of the nest bearing strata should occur monthly from February 1 to July 1 starting during the period when mining is being conducted under the nest strata and continue during each breeding season for 2 years after mining.

UP&L should determine if initiation of the longwall mining and advance rate can be timed to minimize the stress to the nest strata so that the nest strata will subside as a block and optimize the chance that major subsidence of the nests will occur in the non-breeding period, July 15 - February 1.

