



United States Department of the Interior

FISH AND WILDLIFE SERVICE
 ECOLOGICAL SERVICES
 2060 ADMINISTRATION BUILDING
 1745 WEST 1700 SOUTH
 SALT LAKE CITY, UTAH 84104-5110

722
 cc K. May
 ACT/015/018

IN REPLY REFER TO: # 3

(ES)

June 12, 1986

MAIL STOP 65410

MEMORANDUM

RECEIVED
 JUN 16 1986

To: Acting Deputy Administrator
 Technical Services Center West
 Office of Surface Mining
 Denver, Colorado
 Attn: Richard Holbrook

DIVISION OF
 OIL, GAS & MINING

From: Field Supervisor, Ecological Services
 Fish and Wildlife Service, Salt Lake City, Utah

Subject: Raptor/Subsidence Monitoring Plan for Cottonwood Mine.

The Fish and Wildlife Service (FWS) has reviewed the Utah Division of Oil, Gas, and Mining (DOGGM) proposed monitoring plan for the Cottonwood Mine (attached). We find it satisfactory except for the two items discussed below.

- Page 6, paragraph 3: We suggest the following wording for the last sentence. "If responsible for the costs of salvage as directed or conducted by FWS."
- Page 5, paragraph 2: We believe that an adequate control area should be clearly identified that will not be undermined during the expected term of subsidence nor so proximate to the mining that it could be impacted by subsidence adjacent to it. We would not object to a site in Newberry Canyon if the geology is correct, however, we feel comfortable with the original Miller Canyon site. We suggest the following or similar language be inserted as sentence 3. "The control area will be on the north side of Miller Canyon on the west end to include several eagle nests on substrate similar to the affected nests; and, the control area will not be undermined for the life of the mine nor affected by adjacent longwall mining subsidence." The map, CE-10424-EM, will need to be amended to show the photopoints.

We would recommend the plan be accepted with the above changes included.

Attachment

Robert L. McCarroll

cc: [redacted]

GOLDEN EAGLE NESTING/CLIFF SUBSIDENCE

MONITORING PLAN

RECEIVED
MAY 29 1986

DIVISION OF
OIL, GAS & MINING

INTRODUCTION

Active Golden Eagle nests have been located by the Fish and Wildlife Service (FWS) within the boundaries of Utah Power & Light Company's (UP&L) coal mining properties (see Map #1). Several nest clusters are situated on vertical sandstone cliffs which overlie the longwall panels in the Cottonwood Mine (see Maps #2 and #3).

There is concern among regulatory agencies that mining related subsidence and cliff spalling may impact eagle nesting. Therefore, Utah Power and Light will implement the following monitoring plan to identify potential impacts on these species.

OBJECTIVES

1. To collect information on nest location, nest status and nesting success of Golden Eagles within the study area.
2. To monitor the effects of subsidence on Golden Eagles nests in potentially impact areas.

3. Collection of nest and subsidence monitoring information to develop methods to eliminate or minimize adverse subsidence related impacts on Golden Eagles in the study area and to serve as guidance to avoid or resolve similar resource conflicts in the future.

STUDY AREA

For the purpose of this monitoring effort, the study area will require a Golden Eagle nest taking permit and will consist of that area referred to as Newberry Canyon which overlies the Sixth and Seventh East longwall panels in the Cottonwood Mine. All nests subject to potential subsidence in Newberry Canyon will be included for determination of impacts on nesting.

This area will be monitored for cliff subsidence and spalling. A portion of representative cliffs, beyond the limits of predicted subsidence, will be monitored for spalling, as a control site to provide comparative data.

Additionally, an aerial nest inventory survey will be conducted within a ten mile radius area as indicated on map CM-10680-EM in early 1987.

PERSONNEL AND EQUIPMENT

Nest inventory surveys will be conducted by the following qualified personnel:

U. S. Fish and Wildlife Service - Mike Lockhart
(FWS) or Bruce Waddell
Utah Division of Wildlife
Resources (DWR) - Miles Moretti
Utah Power & Light Company - Val Payne
(UP&L)

A Jet Ranger or Lama helicopter with complete onboard communications, capable of transporting three (3) field personnel will be used. Both the helicopter and the pilot involved in the nest inventory surveys will be certified to meet FWS requirements.

Cliff subsidence monitoring will be conducted by UP&L engineering personnel using total station Electronic Distance Metering (EDM) equipment and standard surveying practices.

METHODOLOGY

An aerial nest inventory survey was completed in May 1986, within a ten mile radius area of Newberry Canyon. Similar Golden Eagle nest inventory surveys will be completed during the 1987 breeding season. Data developed will be similar to that discussed in the FWS publication Raptor Nest Information Management System, RAPA file and RAPB file (see Appendix B, page 2, 18-29).

Surveys will be conducted using a helicopter and observers as previously stated. Similar to the 1986 surveys, the work will be completed by flying near the cliff nest sites at a speed and proximity such that nests are observable.

The inventory flight will be conducted and observed by FWS at approximately mid-incubation (mid-April). During the flight, suitable cliff nest sites within a ten mile radius of Newberry Canyon will be examined for Golden Eagle nests. The appropriate file data and nest status will be recorded for observed nests. The location of all raptor species nests observed in Newberry Canyon, will be recorded.

In addition to the 1986 inventory flight, eagle activity within the ten mile radius area will be observed and recorded, for a twelve (12) month period beginning June 1986.

Photogrammetric subsidence monitoring in Newberry Canyon will be completed as presently outlined in the UP&L Subsidence Monitoring Plan. In addition, cliff subsidence monitoring will be accomplished through the use of EDM equipment.

Prior to longwall mining, a permanent control station will be located (horizontally and vertically) from which the cliff nesting area can be observed. Four reflector prisms will be installed on the cliff above the nest area. The prisms will be located (horizontally and vertically) in reference to the permanent control station. This will provide a method of determining both horizontal and vertical movement in the cliff strata. This method of observation will facilitate correlation of surface subsidence with the position of the longwall face.

Initial pre-mining observations will provide baseline information for the cliff strata. Once extraction of the longwall panel begins, observations will be conducted at two (2) month intervals if the nests in Newberry Canyon are inactive. However, if an active pair of eagles is present in Newberry Canyon, EDM monitoring will be completed each month during the breeding season (February through June) and at two-month intervals during July through January.

Fracturing and spalling of the cliff face will be determined by a ground station photo/grid system. Permanent photo stations will be located from which photographs of the nesting area cliff face can be taken (see map CE-10424-EM). Photographs will be taken using a 35 mm SLR camera with a telephoto lens. Statistically adequate photographic sampling of the cliff face, which represents affected and control situations, will be made to determine the relative degree of spalling. A grid system will be superimposed upon the photographs whereby areas of fracturing and/or spalling can be identified. The grid will be of adequate complexity to allow replacations and pooled data analysis. Photographic sampling will be conducted according to the same schedule as the EDM monitoring.

Eagle activity associated with active nests in the Newberry Canyon study area will be monitored in conjunction with EDM and photographic data collection. Nest activity data will be recorded on the Nest Activity Data Form

*Control area
needs to be
specified*

correlated with underground mining activities, EDM measurements and cliff spalling data (see Appendix C for data forms).

Subsidence and Golden Eagle nest monitoring will continue until *major subsidence has ceased, or until such time that data demonstrates a conflict between Golden Eagle nesting and cliff subsidence does not exist.

Data will be reported in UP&L's annual Subsidence Monitoring Report. However, significant subsidence events which affect nests will be immediately reported to Utah DOGM, OSMRE, FWS and DWR. If it is determined that mine related subsidence is going to impact an active eagle nest, Utah Power and Light shall be responsible for salvage.

FWS will specify salvage requirements

COMPENSATION - MITIGATION

A stated objective of the monitoring plan is to use the plan data, "to develop methods to eliminate or minimize adverse subsidence related impacts on Golden Eagles". Therefore, specific mitigation or compensation measures cannot be identified until the impacts are defined. However, in accordance with the requirements of the applicable statutes, regulations and permits related to the monitoring plan, UP&L will cooperate with FWS in developing appropriate mitigation or compensation measures if adverse subsidence related impacts occur. Possible compensation or mitigation measures may include:

* Major subsidence represents 80% of extracted seam height.

1. Creation of artificial nest sites or structures.
2. Relocation of nests.
3. Salvage or relocation of nestlings.
4. Habitat enhancement.

UP&L will obtain current information on recent activities related to Golden Eagle nest manipulation for use in developing compensation or mitigation measures.