



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

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January 19, 1995

Mr. Wendell Owen  
Co-Op Mining Company  
P. O. Box 1245  
Huntington, Utah 84528

Re: Subsidence Mitigation Plan, Co-Op Mining Company, Bear Canyon Mine,  
ACT/015/025, Folders #2 & #5, Emery County, Utah

Dear Mr. Owen:

The Division has completed a review of the Subsidence Mitigation Plans which were submitted as an abatement to NOV #94-46-4-1b. At this point your plans are not considered adequate. Please review the enclosed technical review document which discusses the problems with the plans. You should revise your abatement plans making sure that you have addressed the requirement sections of the review. Please be aware that you are still under the abatement obligations and timeframes specified in the NOV. We look forward to your speedy response.

Please call if you have questions.

Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock  
Permit Supervisor

enclosure

cc: P. Hess  
T. Munson  
P. Grubaugh-Littig  
J. Helfrich

subsilet.bea



# SUBSIDENCE MITIGATION REVIEW

Co-Op Mining Company  
Bear Canyon Mine, ACT/015/025  
NOV# 94-46-4-1b  
January 18, 1995

## ENGINEERING R645-301-500

### Analysis

In reviewing the plan and the photographs which Tom Munson took on October 25, 1994, it is calculated that approximately 1,600 cubic yards of material will be necessary to fill the voids. This is a huge amount of material to attempt to move by manual labor. Although Mr. Reynolds indicates that explosives will be used to "assist" in closing and sealing the openings and large fracture, he does not indicate how the charges will be placed or how any of the other criteria which must be designed will be so done as required by R645-300-524.210 & 212. Mr. Reynolds references Appendix 3-M as the blast design control; however, the blast design in Appendix 3-M specifically refers to boulder size reduction and blasting design for road construction purposes. Boulder size reduction may be utilized in the making of fill for the voids; however, this presents another problem. How does the permittee propose to place the charges to reduce the vertical sides of the holes and how will the reduced boulders be placed in the voids without endangering the lives of the worker?

It appears the plan is to obtain the fill material (1,600 yards) from wherever it can be salvaged. Doing this can destroy vegetation and natural sediment control at random. Work will be conducted right in a drainage. Although the drainage was not flowing at the time of the inspection, its watershed consists of 56 acres, (See page 3N-4). Alternated sediment control is not addressed, (R645-301-742.111). Revegetation is not addressed, (R645-301-353). Compaction is not addressed, (R645-301-553.522).

### Requirements:

1. If explosives are to be used, a specific blasting plan and design must be submitted which outlines the purpose of and identifies the results of the blasting.
2. Specific plans must be supplied which identify the source of fill materials to be used.
3. Sediment Control must be addressed.
4. Revegetation plans for the areas affected must be submitted.
5. Compaction of the area must be addressed.

## **HYDROLOGY R645-301-700**

### Analysis

The plan addresses on page 3N-4 the specifics related to the reconstructed channel. The plan needs to be clarified in regards to showing the existing channel in cross section and the location of the proposed channel and its cross section. The calculations need to be submitted as well and the operator has used the Type B Distribution to calculate flows from the 24 hour storm when it would be more appropriate to the Type II Distribution. There is no reference to the appropriate tables or figures for riprap sizing and depth, as well as, the need for a filter blanket or cloth to be used under the riprap. It is understood that an actual survey can not occur at this time of year but one should be carried out in the spring and the plans based on more specific channel cross sections. The plan refers to a three foot wide channel when the native channel is 15 feet across.

There is also talk of a monitoring plan but it lacks specifics (i.e., about how information will be collected to determine if any fractures re-establish themselves and/or that the channel stays intact as well as specifics about when the surveys will take place (spring and fall).

### Requirements

The abatement is not complete until the following information is clarified.

1. The designs for the reconstructed channel need to be based on actual cross-sections and information surveyed in the field in the spring. All cross-sections are drawn up and presented with the appropriate design calculations emphasizing the transition between the upstream and downstream cross sections and profiles.  
A commitment to do this when the snow clears will be considered adequate.
2. Any riprap installed should have an underliner of filter fabric or grouting to prevent piping into old voids. The purpose being that something is needed to help any flows cross the old fractures without significant infiltration. Reference to the installation of a properly graded riprap of a certain rock size distribution is appropriate.
3. The use of the 10 year-24 hour storm for designs is important to get an idea of an appropriate design event but not as important as creating a channel which blends into the surrounding topography and allows flows to pass over the subsided areas without compromising the repair. It was mentioned that a three foot channel would be constructed when the native channel was fifteen feet, raising some obvious questions.