

Environmental studies will be used in making decisions about the design and location of mine and mill facilities. It will also provide a baseline for measuring and mitigating effects of subsequent mining operations.


Closely connected to the environmental assessment are studies of socioeconomic impacts that will be conducted by AMAX and Gunnison County. Gunnison County has recently decided to implement an innovative computerized system, developed by COMARC, Inc., for producing maps that can illustrate and compare land-based data from many sources. With a state grant of \$157,000 and an AMAX contribution of \$100,000, the county has started collecting information for comparing land-use and growth-management alternatives.

Government Involvement

To coordinate local, state and federal government involvement in Mt. Emmons project planning, a pioneering effort using The Colorado Review Process has been initiated. The process helps insure that the requirements of local, state and federal government agencies are integrated into the planning process early, so that these agencies can plan at the same time and with the same information as AMAX personnel. Without it, government approval and public understanding and acceptance would be out of phase with the detailed evaluation of the Mt. Emmons deposit.

AMAX is hopeful that further evaluation of the deposit and the continued open exchange of information between the company, government agencies and the public will allow mine construction to begin in the early 1980s.

Making a Mine at Mt. Emmons

**MOUNT
EMMONS** 
AMAX  **INC.**

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Today, mining is far more complex than finding a mineral and extracting it from the earth. Many factors must be considered before hundreds of millions of dollars and significant time are invested in the development of a mine.

The first consideration requires evaluating the grade and quantity of the deposit to determine whether the cost of extracting the ore balances with society's need and the existing market. With the cost of a major underground mine as high as it is today, extensive evaluations are essential. The Henderson Mine at the foot of Berthoud Pass cost \$500 million and required nine years to build.

Second, careful consideration must be given to the impact mining can have on the surrounding communities both from an environmental and socio-economic standpoint. AMAX will work closely with government agencies during the planning stages to insure that all areas affected by mine activity are considered.

Ore Evaluations

In the mid-1970s, AMAX Inc. began exploring for molybdenum at Mt. Emmons, near Crested Butte, Colo. By 1977, information from early core drilling indicated a significant molybdenum deposit may exist. AMAX obtained the property and began more detailed evaluations of the grade and size of the deposit.

Because milling and processing a ton of raw ore yields only about four or five pounds of molybdenum, grade evaluations are vitally important. Thus far, test drilling in the Red Lady Basin on Mt. Emmons has revealed the presence of a good grade of molybdenum ore in an inverted bowl-shaped deposit, averaging about 300 feet in thickness.

Further evaluation, which means more drill holes spaced closer together, is necessary to determine whether the grade of molybdenum is uniform throughout the entire deposit — both vertically and horizontally — and what the actual size of the deposit is.

Test drilling will continue through 1978 and 1979. It is a slow and expensive process. A surface diamond drilling rig averages about 30 to 35 feet during one employee shift. In a three-shift day, the rig drills 100 feet. The cost is \$26 to \$28 per foot. With normal delays, completion of a single test hole often requires a month or more.

How many test holes will be required is uncertain. The location of the next hole often depends on information from the previous one. AMAX is conducting both surface and underground drilling, sometimes employing as many as seven drill rigs at one time.

Underground exploration is being conducted at the 1370-foot level and the 2000-foot level (measuring down from the Mt. Emmons summit) of the former Keystone Mine. Most recently a lead and zinc mine, the Keystone ceased operating in 1975.

Testing will also include evaluation of a bulk sample of the ore to evaluate its physical and metallurgical characteristics. The first sample for this pilot mill test work will be available in early 1979.

Mine Engineering

Even before the final data is gathered, design and engineering of alternative mine and mill site locations; transportation systems; and tailing, or sludge, disposal methods must begin. Initially, this work is conceptual, but planning must begin in order to set priorities and make preliminary cost estimates. The process of refining initial concepts will continue with changes and modifications as more information about the ore deposit is obtained.

Preliminary engineering studies have identified two possible mine locations and eighteen possible mill and tailing locations. Engineers have now singled out five mill and tailing sites as warranting further study. The sites are three to thirty miles from Mt. Emmons. At the same time, engineers are evaluating methods and routes for transporting the ore from the mine to the possible mill sites.

Because the mill and tailing sites are located on both public and private land, the U.S. Forest Service will play an important role during 1978 and 1979 in the evaluation and selection of the sites, as well as access routes.

Still other factors being considered in site selection are the accessibility of water needed to operate the mill.

Impact Studies

AMAX is also thoroughly assessing the environmental and socioeconomic impacts molybdenum mining may have at Mt. Emmons and adjacent areas as part of its planning program.

The first environmental challenge the company faced when it acquired the property in 1977 was the stabilization of four tailing ponds used in previous mining operations. Two years before, the lower-most tailing dam failed and tailing washed down slope into Coal Creek. All of the ponds needed to be fortified to eliminate the danger of additional failures.

The dams were stabilized and a drainage system installed to collect all waters affected by the Keystone Mine. Plans for treating the water began in late 1977. In 1978, the company also began environmental baseline studies of air and water quality, weather, wildlife, soils, noise, aquatic biology, geology and heritage resources in the Mt. Emmons area. Data from these en-