

MOLYCORP, AN INDUSTRIAL DISCHARGER

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Molycorp, now a division of Union Oil, operates a molybdenum mine and mill upstream on the Red River from the village of Questa (see map, figure 1; photograph, figure 2). At the mill, the ore is ground and processed to remove molybdenum. The waste materials from the mill form a slurry (approximately 60 percent water, 40 percent solids; by weight) known as tailings. These are transported through a pipeline system approximately nine miles long to a tailings disposal area downstream from Questa. Liquid overflow from the tailings pond is discharged to a small decant pond called Pope Lake and thence to the Red River. The discharge to the Red River is regulated by a National Pollutant Discharge Elimination System (NPDES) permit.

Effluent limitations can be imposed through NPDES permits. There are nationwide NPDES effluent limitations that must be met by all dischargers in a given category (in this case, molybdenum mining and milling). In addition, the state can, through the permit certification process, impose more stringent limitations if they are to meet the stream standards adopted by the New Mexico Water Quality Control Commission (1), including the general standard for hazardous substances. When Molycorp's permit was being negotiated in the mid 1970s, two major concerns were under discussion:

1. The quality of the discharge from Pope Lake to the Red River

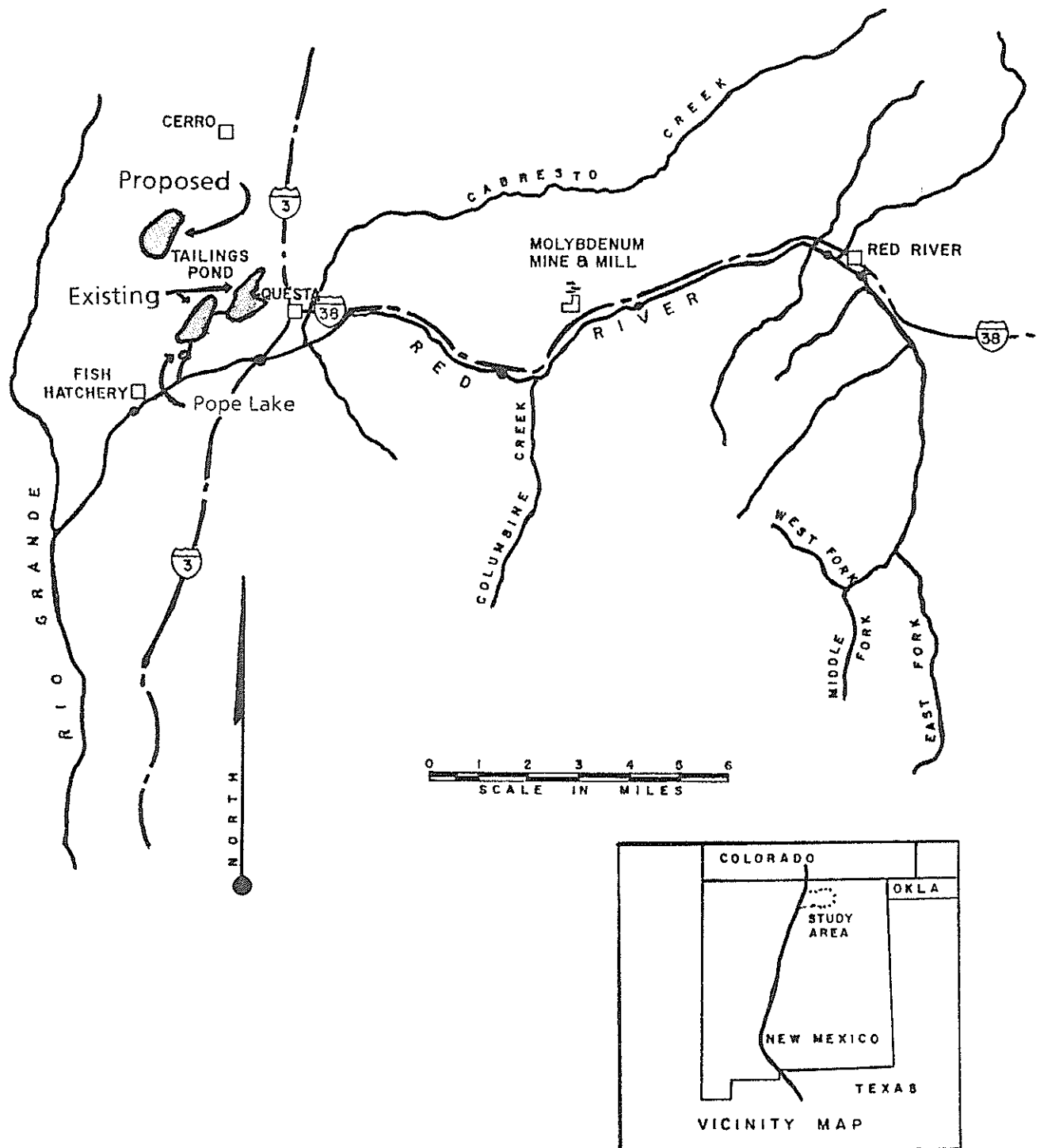


Fig. 1. Location Map



Fig. 2. Molycorp Mill and Open Pit Mine

2. The numerous breaks in the tailings pipeline which had been occurring since it was put in use in 1966, and the resulting spills of tailings into the Red River

With respect to the permitted discharge from Pope Lake, the Water Pollution Control Bureau of the New Mexico Environmental Improvement Division (EID) took the position that restricting the molybdenum level to prevent vegetation from accumulating molybdenum levels toxic to animals and restricting the levels of cyanide, cadmium and zinc to protect fish life were necessary to meet New Mexico stream standards. With respect to the tailings line breaks, the division took the position that an effective spill prevention plan was necessary.

There was considerable public interest in Molycorp's permit. A public hearing (2) was held on the permit application by the U.S. Environmental Protection Agency (EPA), the permit issuing entity. Subsequent adjudication resulted in a stipulated agreement (3) among the parties which were, in addition to the EPA, the EID and Molycorp, the U.S. Bureau of Land Management, the U.S. Forest Service, the New Mexico Citizens for Clean Air and Water, and the Rio Grande Chapter of the Sierra Club. The permit, issued in June 1977 (4), incorporated all of the provisions requested by the EID to protect stream standards. Requirements included a strict design and construction development program to result in a decrease in molybdenum discharge in 1983, and development and implementation of a spill prevention plan.

The Molycorp mill is not operating at the present time while mining operations are changed from the old open pit mine to the new underground mine. The present tailings area is being expanded to accommodate initial tailings from the underground operation which is expected to begin in mid-1983. At the same time, a new 1,320 acre tailings area on Guadalupe

Mountain about three miles west-northwest of Questa is being proposed to accommodate future tailings until the year 2018 (5, 6). The surface discharge from the new tailings area would be transported back to the existing tailings facility near Pope Lake where it would be treated in the new ion exchange plant to remove molybdenum and then discharged back to the Red River through the existing NPDES outfall. See figure 3 for an aerial photograph of the existing and proposed tailings areas.

Under the New Mexico Water Quality Control Commission (WQCC) regulations (7), the new tailings pond is (in addition to its NPDES permit) required to have an approved discharge plan which is, in effect, a permit to discharge to ground water. The discharge plan will address discharges by seepage through the pond bottom, which are predicted to be substantial. Molycorp was notified in January 1983 by the EID that a discharge plan was required for the proposed new tailings pond. In order to obtain discharge plan approval from the EID, Molycorp must demonstrate that the discharge to ground water will not cause the ground water quality standards in the New Mexico Water Quality Control Commission Regulations to be violated at any place of present or foreseeable future use. Molycorp must also demonstrate that the discharge to ground water will not cause any stream standard (1) to be violated. This latter requirement for discharge plan approval is particularly relevant in the case of the proposed Guadalupe Mountain tailings disposal site for the following reasons.

Guadalupe Mountain is a volcanic cone and presently available data indicate high permeability and rapid movement of ground water through the basalt under and around it (6, 8). The proposed tailings site is between the Red River and the Rio Grande on public land administered by the U.S.

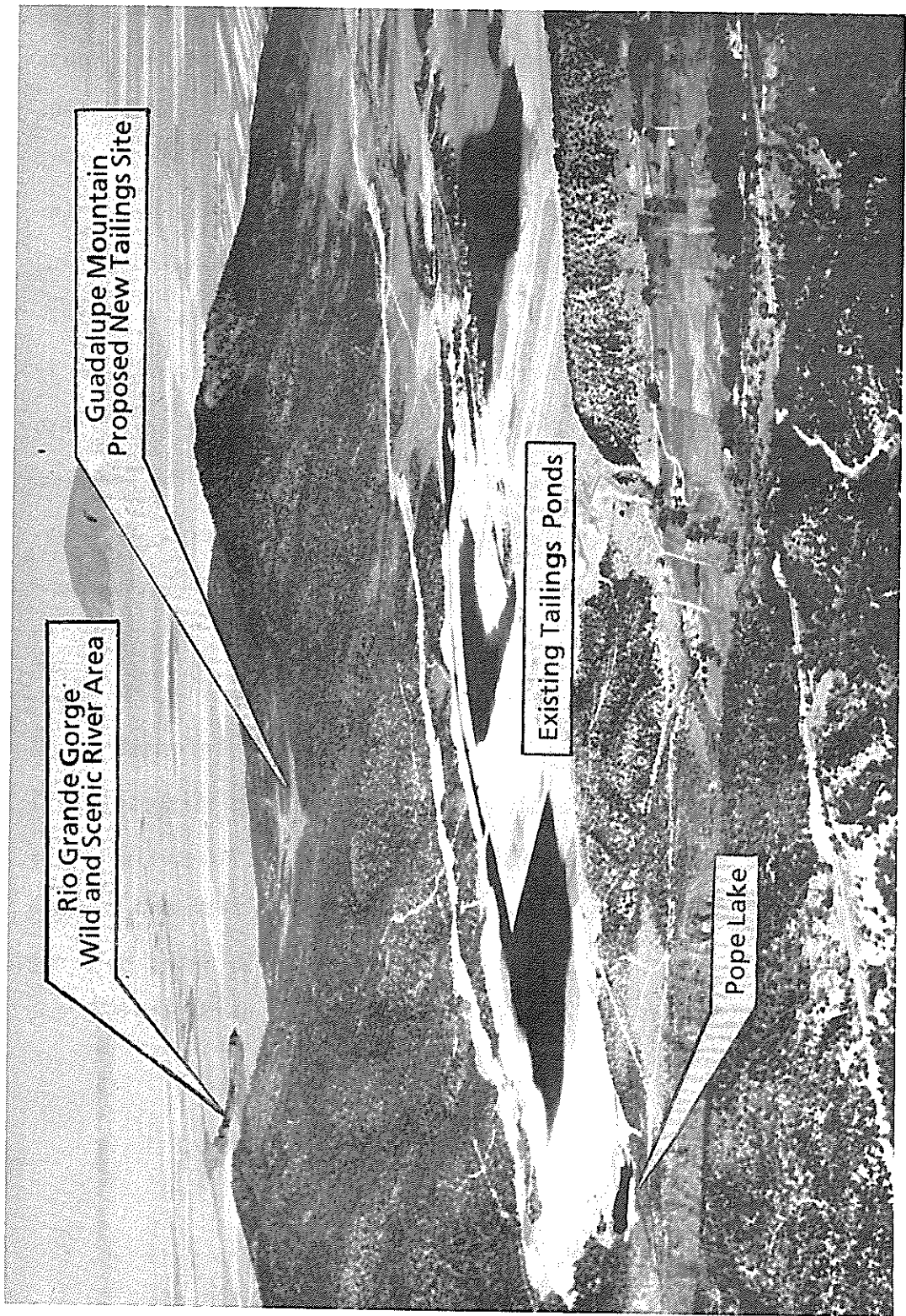


Fig. 3. Molycorp Tailings Area Near Questa, New Mexico

Bureau of Land Management and adjacent to the Rio Grande Wild and Scenic River Recreation Area. This segment of the Rio Grande and the first four miles of the Red River above the confluence, were designated by Congress in 1968 for inclusion in the Wild and Scenic Rivers Act. There are natural springs along both the Red River and the Rio Grande in this area. The springs presently have extremely good quality water although Big Arsenic and Little Arsenic springs have misleading names. Legend has it that in the 1920s, a hermit who lived by Big Arsenic Spring gave these springs names to discourage others from coming there. The various springs in this area support diverse aquatic communities, serve as a water supply for visitors to the recreation area, and contribute substantially to the flow of both rivers.

Before discharge plan approval can be obtained under state regulations, Molycorp will be required to submit adequate information to demonstrate that the proposed Guadalupe Mountain tailings disposal will not cause stream standards to be violated, either in the stream channels of the springs which constitute tributaries to the Red River and the Rio Grande, or in the main stems of the rivers themselves. To date, Molycorp has not yet submitted the discharge plan for the Guadalupe Mountain site.

REFERENCES

1. New Mexico Water Quality Control Commission. 1981. Water Quality Standards for Interstate and Intrastate Streams of New Mexico. Santa Fe, New Mexico. 40 pp.
2. U.S. Environmental Protection Agency, Region VI. 1974. Transcript of Public Hearing held October 9, 1974, in the Matter of NPDES Permit Application by Molybdenum Corporation of America, Questa, New Mexico, Division. 120 pp. plus exhibits.
3. _____ 1977 a. Stipulation for Regional Administrator's Approval in the Matter of National Pollutant Discharge Elimination System Permit for Molycorp, Inc. Permit No. NM 0022306. 11 pp.
4. _____ 1977 b. Authorization to Discharge Under the National Pollutant Discharge Elimination System, Permit No. NM 0022306 issued to Molycorp, Inc. on June 16, 1977. Dallas, Texas, 11 pp.
5. Molycorp, Inc. 1982. Plan of Operations. Guadalupe Mountain Tailings Disposal Area Questa, New Mexico. Submitted to the U.S. Bureau of Land Management.
6. U.S. Department of the Interior, Bureau of Land Management. 1983. Draft Environmental Assessment, Proposed Molybdenum Tailings Disposal Facility for Molycorp, Inc. Albuquerque, New Mexico, 58 pp.
7. New Mexico Water Quality Control Commission. 1982. Water Quality Control Commission Regulations (as amended through September 20, 1982). Santa Fe, New Mexico. 70 pp.
8. Winograd, I. J. 1959. Ground Water Conditions and Geology of Sunshine Valley and Western Taos County, New Mexico. New Mexico State Engineer, Technical Report No. 12.