IS THIS SCENARIO TO YOUR LIKING?--
WATER QUALITY PREDICTIONS IN MINING IMPACT STUDIES

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Most commercial gold mining in the western United States occurs on federally-managed lands. Increasingly, these operations are huge open-pit mines, maybe1000-1500 feet deep, possibly a mile wide and a mile or more long. Waste materials often account for more than 95 percent of the material to be mined. Mining on such a massive scale inevitably generates some negative environmental impacts, especially where it proceeds below the water table. Considerable public opposition has developed at many sites because of the fear that taxpayers will be "stuck" with the cleanup costs after such mines are closed. The federal management agencies attempt to oversee the permitting and operational processes with the intent of minimizing future impacts to the site, but also feel obligated to promote mining of the resource. How can the agencies assure the public that surface and ground water quality will not be degraded? Obviously that is impossible. Hence, the mining company is usually required to present specific predictions of future water quality in the environmental impact studies. Such predictions lend an air of certainty and often allow projects to move forward.

The following case study discusses an actual, but unnamed open-pit gold site in Nevada on U.S. Bureau of Land Management(BLM) land. It has been projected that once mining ceases, a pit lake on the order of 800 feet deep will remain. No comparable deep pit lakes exist for actual comparison. Numerous predictions of the pit lake water quality were prepared by the mining company's consultants—most of which appear to be quite optimistic and unrealistic.Geoscientists and regulators often feel that better science and models would solve the problems. This paper argues that the present system ensures professional conflicts of interest and the generation of unrealistic predictions. The public would be better served through a revised system of environmental liability bonding or pooled insurance. Predictive models should be used to improve the conceptual understanding of the rock-water systems, not to make predictions of precise concentrations.

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