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## 2. **MINING: Stronger safeguards needed to protect water quality near extraction, group says**

**Arthur O'Donnell, *Land Letter* editor**

A new study released today finds widespread failure to properly predict and mitigate potential water contamination from Western hardrock mines.

Released as part of a continuing investigation by the environmental group Earthworks into water-quality issues related to mining, the study, "Comparison of Predicted and Actual Water Quality at Hardrock Mines" concludes that federal agencies that issue mining permits frequently fail to accurately assess the potential for acids and toxic metals to leak into rivers, and that in a majority of cases conditions meant to prevent contamination are ineffective.

As a result, the researchers add, taxpayers may be liable for a \$20 billion shortfall between the value of assurance bonds taken out by mine operators and the true costs of environmental cleanup.

There are about 200 active hardrock mines on federal lands in the West, mainly on Bureau of Land Management properties or Forest Service lands. With prices for metals increasing, a spate of new permit applications is running about four times the number from five years ago, said Alan Septoff, research director for Earthworks. Exact figures were unavailable from BLM, which tracks mineral extraction permits.



The Jamestown mine in California had a poorly designed embankment and pit liner that failed to prevent contaminated seepage into groundwater. Photo courtesy of Earthworks.

"Regulators have been permitting mines basically on faith," Septoff said. "To permit a mine, regulators have to sign off on predictions about environmental impacts. But they've never gone back to check the results against the predictions."

That is what the research was intended to do, said Ann Maest, a water quality geochemist, who co-authored the study with mining engineer Jim Kuipers. She told *Land Letter* that they reviewed over 100 environmental assessments for 71 hardrock mines located on federal lands, with a deeper analysis of 25 mines to see how actual water impacts compared with what was projected in the permitting process.

In many cases, it was difficult to obtain initial reports, requiring Freedom of Information Act requests to develop the basis for any assessment of how predictions matched

reality.

What they found was chronic underestimation of problems, due to inadequate characterization of risks to water quality and the failure of mitigation efforts. In the 25 mines comprising the case studies, Maest said, 76 percent caused pollution of groundwater or surface water that exceeded water quality standards.

Maest said the two major risk factors are proximity of the mine to waterways and the potential for drainage of acid caused by exposure of sulfides to air and water. While most of the mines studied closely exhibited serious contamination, some were better performers than others relative to what had been predicted in their permit process. She pointed to the Stillwater Group Mine in Montana, a Platinum-group mine that, while close to water, showed low acid drainage potential. Also desert mines in California exhibited little problem because they are not close to water, she said.

Overall, however, about three-quarters of mines investigated caused excessive pollution even though mitigation conditions to their permits predicted there would be no problems. "Either they did not apply the right mitigations, or they are not working," Maest said.

One example is the Jamestown mine in California, where the study said a faulty pit liner and poorly designed embankment identified as mitigations in the original environmental impact statement failed to protect groundwater quality.

As for inadequate advance identification of problems, many assessments did not even recognize the risks caused by acid drainage or test for potential toxics contamination. Acid drainage was found in nearly all the mines studied, while 89 percent predicted it would not occur. Toxic heavy metals, including lead, mercury, cadmium, copper, nickel and zinc, exceeded standards at 63 percent of the mines. Arsenic and sulfates exceeded standards at 58 percent of the mines, while cyanide exceeded standards at 53 percent, the study found.

Maest explained that metals are toxic to fish and animals in lower doses than to humans, but cyanide and arsenic are also harmful to human health. "These tests need to be improved," she concluded.

Earthworks' Septoff said the study puts a spotlight on the need for regulators to be more cautious about signing off on permits without understanding the real risks. "At the highest risk mines, the default assumption should be not to permit unless regulators have strong evidence they are not going to pollute," he said.

Among top priorities for the group are the Pebble gold and copper mine at the headwaters of Bristol Bay in southwest Alaska, the Rock Creek silver and copper mine in Montana, the Atlanta gold mine near the Boise River in Idaho, and uranium mines in Colorado and the Four Corners region.

Although BLM officials said they had not yet reviewed the study in depth, spokeswoman Celia Boddington told *Land Letter* the agency has "serious concerns" about it based on an initial reading.

"We are concerned that this report may have overly simplified what is a very complex issue," Boddington said. "For example, we are concerned that any increase in a water quality measure is being interpreted as an adverse water quality impact, regardless of permissible standards. Theoretically, if a mine had one water quality measurement in 25 years of water sampling that exceeded what was projected in any EIS completed for the project, that mine would be counted negatively in this report. This report is constructed in such a fashion that it is possible for a mine that has consistently met all water quality standards to be categorized as a polluter."

In addition, "We have not yet found an analysis of the complex land ownership patterns around existing mines and how land ownership can effect who is the regulatory authority. Many of the mines analyzed are located on numerous patented mining claims that were issued in accordance with the Mining Law of 1872, and which effectively function as private property," Boddington added.