

## Impacts of Block Cave Mining to Oak Flat Campground, Apache Leap, and Gaan Canyon

Resolution Copper Company (RCC), a wholly owned subsidiary of two foreign mining companies, Rio Tinto and BHP-Billiton, have asked Arizona's Senators to introduce S 409, a land exchange bill that would privatize Oak Flat Campground and the surrounding area and heavily impact Apache Leap, Gaan Canyon, and Queen Creek. Although the bill does not talk about mining methods and exempts the land exchange from any environmental analysis until, at best, after the fact, the company wishes to use a mining method called block cave mining. Block cave mining has been described as an upside down open pit mine and although the mining would take place deep underground, the surface would be heavily impacted in several ways.

What block cave mining does is extract an ore body by excavating beneath the ore body and then collapsing the ceiling and using gravity to remove the ore from underneath. This creates a large void which is not filled. Leaving this large void creates an unstable situation that causes surface crack and eventual surface subsidence. This subsidence does not happen in a vertical zone above the ore body, but in a cone that will be anywhere from a 70% to a 45% angle from the bottom of the void. If RCC's estimation of the ore body is correct, the worst case scenario would lead to the collapse of some of Apache Leap to the west of the ore body and Oak Flat Campground to the east. Estimates of the depth of surface subsidence range anywhere from 50 to 200 feet to even more. In addition to the collapse of the surface, block cave mining will cause surface cracking before actual subsidence would occur. Since the ore body is estimated to be between 4,000 and 7,000 feet, the current water table would be upset and most of the surface would be de-watered.

### Impacts from Block caving to the surface:

- The estimated size of the ore body is one mile wide and one mile deep. Under the worst case scenario, the subsidence would impact a circle 4 miles in diameter centered over the ore body. This would include Apache Leap, the Oak Flat Campground and portions of Queen Creek.
  - This would cause the permanent and total destruction of any sacred sites within this area.
  - There would be widespread disruption, if not destruction, of wildlife within this area.
  - Oak trees at the campsite and other flora in the area, including the endangered Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*), would be also be disrupted or destroyed.
  - The land exchange would privatize any sacred sites in the Oak Flat vicinity, but the danger of, and actual subsidence, would make access to any remaining sites not destroyed or damaged impossible.

### Impacts to water from block cave mining:

- Surface cracking and eventual subsidence would severely disrupt both the flow of surface and subsurface water. Any underground mine requires pumping of water to keep the mine shafts and working dry. This causes a cone of depression to the water table very similar to what a water well causes.
- As part of the exploration and preparation for a mine at Oak Flat, RCC has begun to dewater more than 2 billion gallons of water from the existing old mine workings between Oak Flat Campground and Apache Leap. This dewatering will dry up the surface about the old mine. While impossible to tell how extensive this dewatering will be since no studies have been conducted on the impacts of this dewatering, anecdotal evidence shows that when the mine was in operation and pumping to keep

the shafts dry, there was a noticeable impact to Queen Creek which borders the north side of the mine site.

- Once subsidence begins to create surface cracking, the entire water flow pattern of surface and subsurface water will be disrupted and most water will eventually end up in the void created by the mine.
  - This will dry up all area wetlands and springs in the Oak Flat campground, Apache Leap area as well as the incredibly diverse riparian area of Gaan Canyon. Queen Creek will also be disrupted to some degree.

**Conclusion:**

The impact of a large block cave as projected by RCC will cause massive disruption and destruction to the ecosystem from the town of Superior east to at least Gaan Canyon. It will also impact or outright destroy any sacred sites or areas of religious importance. Long before the impacts of subsidence would be felt, most of the area would be off-limits to the public and to the Tribes for all purposes, both religious and secular.

A block cave mine at Oak Flat would cause the de-watering of the entire area and would heavily impact, if not destroy the precious riparian areas at Oak Flat, Gaan Canyon, and Queen Creek. Springs throughout the area would be disrupted or dry up. Not only would this impact the ecosystem, it would also impact the viability of these water features for religious use.

The risk to one of the state of Arizona's most precious riparian areas used for wildlife, religious purposes, and for recreation from a block cave mine facilitated by S 409 is extreme. The bills outright bypassing of environmental and cultural studies before the fact is very troubling. Since the bill's proponents have no desire to fully implement these studies before the bill moves forward, the danger to the health of the ecosystem and the right to religious freedom from S 409 leave no choice but to oppose the bill.