Fern Bromley

Dear Arizona Department of Environmental Quality,

I'm writing to urge you to deny South32's Hermosa permit (#AZ0026387) for discharge of mine water into Harshaw and Alum creeks. The impacts of the proposed groundwater withdrawal and effluent discharge would be incredibly destructive to the local ecology and hydrology and are thus unacceptable.

First, dropping the groundwater level in an area like this would be highly destructive. The change in hydraulic gradients around the mine could change where current springs emerge, leading to the permanent drying of natural springs. It would also lead to significant loss of upland trees that depend on having their roots in the water table. The death of surrounding trees will decrease the landscape's overall resilience, potentially increase erosion, and could lead to the present ecosystem's radical transformation through increased potential of invasion by fire-prone introduced grasses.

Expected harms from the water discharges are also deeply concerning. Up to 6 million gallons of water per day could be forced down Harshaw Creek and up to 172,000 gallons per day down Alum Creek. These volumes are significantly higher than current flow levels. This will lead to severe erosion upstream, excessive sediment loads downstream, and the burial of several important water sources such as the seven seeps and springs known in Harshaw Creek and the nine seeps and springs known in Alum Creek. These harms are particularly concerning because springs are such unique ecosystems with high biodiversity. Their destruction will affect endemic species to an unknown degree because the sites haven't yet been adequately surveyed. Some estimates suggest that refugia like these support more than 20% of endangered and threatened species, despite making up a much smaller proportion of the land surface area (Springs Stewardship Institute).

What's more, such intense flooding will lead to reduced tree recruitment for riparian species like cottonwoods and sycamores; these tree species depend on the current flood regime for reproduction and survival, and the loss of these plant communities over time could lead to subsequent erosion of streambanks. Because the water discharges would be ongoing, the surrounding landscape will be more water-logged. This means a reduced capacity to absorb water during rains, and potential downstream flash flooding. And finally, the quality of the water being discharged in such high quantities is a concern. Its source will be deep underground in the Hermosa project, and although the mine has promised to treat the water before release, its quality could change unexpectedly over time.

Although water in the desert is a rarity, and one would think that increased flow would help our streams, because of the sensitive ecological balance of these riparian ecosystems, a change in flow regime this drastic could permanently alter the character and species composition of these areas.

For all these reasons, I urge you and the Arizona Department of Environmental Quality to deny the permit for this project.

Sincerely,

Fern Bromley