

# Jonathan Bailey

Dear Arizona Department of Environmental Quality,

I am writing as a concerned naturalist regarding the South32 Hermosa permit renewal (#AZ0026387) and think such a permit should be denied.

Groundwater is critical for the unique habitats of the Patagonia Mountains. As a once tropic-like environment warmed, many species isolated in sky islands like the Patagonias, creating a "tide pool" of diversity. In some instances, these plants and animals have been isolated long enough to evolve into genetically distinct species found nowhere else on earth, such as *Vaejovis patagonia*. In addition, these refugium will prove necessary once again as human-caused climate change encourages migration into higher elevations.

Extant species in the region could be extirpated if the water table is reduced. This includes the Mexican jaguar and Mexican spotted owl as well as species from personal observations such as the rare *Amsonia grandiflora*—found in but a sliver of southern Arizona—or the critically imperiled *Metastelma mexicanum* and *Cynanchum ligulatum* or the federally listed *Graptopetalum bartramii*. We also identified the first population of *Gaga arizonica* in the Patagonia Mountains, found very rarely in just three sky islands (the Rincons, Huachucas, and now the Patagonia Mountains). This was the most robust population of *G. arizonica* documented by myself or my colleagues. Due to its close proximity to the mine, this remarkable and still poorly explored habitat would likely see significant impacts as a result of aquifer pumping.

In addition, changes in landscape, such as a loss of native species and/or an influx of invasives in consequence of disturbed habitat constitute a real and significant harm to local archaeological sites, which are reliant on context for proper interpretation, care, and management. These sites, eligible for inclusion under the National Register of Historic Places under Criterion C "[a historic property] that embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction" and/or Criterion D "[historic resources] that have yielded or may be likely to yield, information important in history or prehistory" are often correlated with plants used for food, medicine, or ceremony. This, in addition to their placement on high, overlooking exposures associated with perennial water sources, makes them especially vulnerable to changes in ground water and watershed degradation. It is worth noting that NRHP calls for the protection not just of archaeological and historical sites that are listed but those eligible for inclusion.

As a result, I think it would be appropriate to swiftly and decisively reject the permit.

Sincerely,

Jonathan Bailey