

Comments on Moonlight Springs Reserve mining exemption.

April 29, 2021

I am concerned about potential effects on Nome's drinking water with the proposed mining footprint proposed for 2021. Mining atop the aquifer less than a quarter mile from the City wells is not acceptable. Improper remediation could inject arsenic into the aquifer. This aquifer and the water the residents of Nome utilize has a far greater value to the city than the revenues and tax base of the mining operation.

I have spent some time scouting around the location a few years ago while employed by NSEDC and under permit by the City. The Aquifer that feeds our well field is contained in a limestone stratum that runs through Anvil Mountain and back almost to Banner Creek. Water gradually flows to the low point of the strata located near Moonlight Springs. Water can be in the Aquifer for several years making this journey. The more elevated portions of the stratum draws water in and it leaks out on the southern and western aspects of the stratum. Numerous seeps are evident on the eastern bank of Anvil Creek and along the southern face of Anvil Mountain. Some of the seeps are marked by stands of cottonwoods, which require a year-round water source. All these seeps are the result of positive pressure exuding water from the limestone. This pressure does decline a little over the winter when the Aquifer has very little water flowing into it. This drop in water level is what makes the possibility of contaminated water entering the limestone reservoir possible.

The limestone is currently exposed near the Cooper Gulch Corner on the old Glacier Creek Road. The strike and dip of the stratum is predominantly a tilt to the south with a lessor tilt to the west, the direction of the City well gallery. I believe the exposure of the limestone is an accident waiting to happen as well. The Limestone is dry there and so contaminants would be drawn into the Aquifer if spilled there.

What could possibly go wrong? Arsenic is a common mineral and a significant contaminant of disturbed ground here. Many of us remember why Arsenic Park was a superfund site that needed to be capped back in the 1990s. Let me tell a story that took place a little bit closer to this mine. In the 1980s, we had a dog team and we had a yard just to the west of the Birchwood Hanger and north of Lester Bench, perched on tailings overlooking a dredge pond now buried. The pond was fed by seeps from the tailings and seemed to be the remnant of the Cooper Gulch creek. On Warm summer days we watered the dogs with water from the seep. Our dog lot neighbor, Linda Robertson, raised a couple litters of pups that summer. She watered the pups daily with the seep water. By late summer she realized the pups were fatally flawed. They were deformed with short limbs that were awkwardly formed and the personalities of the pups was different. They had to be put down. She had tests run and found they had arsenic poisoning. Juvenile animals are far more susceptible than adults, so we did not notice problems with our adult dogs. Water flowing through the tailings from the base of Anvil Mountain to our former dog lot was far above the safe limit for arsenic. The tailings are a well-mixed batch of aggregate that made arsenic tea (leachate). The mine proposal suggests leaks or remediation of mining could involve placement of wash plant fines on the Limestone aquifer. Bad Idea!

I believe the Moonlight Springs Water reserve boundaries were draw with the consultation of a registered hydrologist. The idea was to protect the City water supply from exactly this issue. The last several years mining was essentially working areas that were already heavily impacted by mining and

WWII construction of the Satellite Field. The work proposed for the 2021 season is to work largely undisturbed ground. Mining the upper margins of the Aquifer is not likely to cause leaks or declines in water production but has the more serious possibility of contamination. The lower elevation work has potential for water loss but not contamination. Given the current water budget of the aquifer that is the lessor risk, that is mining below the water table in the aquifer.

Sincerely

Charles Lean