

2023 update

Proposed Bitterroot Sheep Creek Rare Earth Mine

by Larry Campbell for Friends of the Bitterroot

Recent corporate press releases announced that a deposit of rare earth elements in Sheep Creek, at the head of the West Fork of the Bitterroot River is being explored and promoted as a possible “green energy” mining opportunity. The deposit was discovered in the 1960’s and subjected to small scale mining. It remained dormant for about 50 years but has recently been revived by new owners, US Critical Materials, a shell company and US Critical Metals Corporation, based in Vancouver, Canada. US Critical Metals is a shell company of Resurgent Capital, based in Toronto, Canada. Resurgent Capital offers specialized services to mining executives in need of pre-planned “exit strategies” should they be found liable for activities related to their mines. The shell holds 223 mining claims covering more than 4,500 acres, or about 7 square miles, on the Bitterroot National Forest.

Rare earth elements, REEs, are a set of 17 nearly indistinguishable lustrous silvery-white soft heavy metals. Although similar in appearance they have very different properties and behaviors. They are not actually rare on earth, but they are rarely found concentrated in mineable deposits. Compounds containing rare earths have diverse industrial applications in electrical and electronic components, batteries, lasers, glass, magnetic materials, and industrial processes. Often found in combination with other members of the REE group they can be very difficult to separate.

New US government policies promoting rapid transition to “green energy” and electrical transportation along with tax subsidies have created a boom in exploration for and development of domestic REE and other “critical minerals”, especially since existing REE sources have been concentrated in China. In the rush to develop new domestic supply chains the US government has enabled expedited permitting procedures, both through Executive Orders and legislation. Additionally, government entities like the Defense Department, US Geological Survey and Montana Bureau of Mines and Geology are directly participating in the exploration boom.

The USGS announced regional airborne geophysics surveys for 2023 to explore both the Idaho cobalt belt as well as the REE-thorium belt, containing the Sheep Creek deposit. Various interested parties are hoping for economic synergy from multiple nearby mines and related manufacturing facilities.

REE's ores are generally mined by excavating open pits and then leaching the ore in adjacent heaps or vats. Sometimes they are mined using in-situ leaching by injecting leaching agents into drill holes bored into the ore. The resulting chemical soup containing REEs is then captured for further processing. Leaching agents used to saturate the mined ore commonly include ammonium sulfate and ammonium chloride, both highly soluble in water and sometimes used as fertilizers. Materials used to refine and separate REEs from resulting concentrates include a witch's brew of toxic chemicals.

Mining REE deposits requires blasting bedrock into rubble which makes removal possible and exponentially increases the surface area of rock, aiding chemical leaching. Unfortunately, it also exposes the increased rock surface area to ground water and air, leading to mobilization as dust or water drainage of metals and other constituents of the rock, like sulfides, asbestos, or radioactivity.

The companies claim the deposit contains the highest reported total rare-earth oxide grades of any rare earth deposit in the United States. REEs are often found associated with thorium, a radioactive element. U.S. Critical Materials says there's not enough thorium at Sheep Creek to require permitting from the U.S. Nuclear Regulatory Commission, supposedly giving the deposit a competitive advantage in addition to the reported high-grade assays. Their promotional material also declares that "Montana is a mining friendly state."

Late fall of 2022 the companies conducted non-mechanized exploration, opening a couple old adits (tunnels) and taking hand samples. They have submitted a Notice of Intent (NOI) to do similar work in 2023. Such hand work does not require NEPA public involvement. Although not included in the recent NOI, company press releases state they want to begin exploration drilling in 2023.

Potential environmental damage is not limited to mining, per se. Exploration activities before mining can also cause irreparable damage. Ground disturbing activities like drilling or road building would trigger the need for a BNF approved Plan of Operations, and accompanying NEPA public involvement process, as well as application for an Exploration License with the Montana Department of Environmental Quality. This would provide official public comment

periods and opportunities to reality check just how “mining friendly” the Bitterroot actually is given the specific circumstances of the Sheep Creek situation.

“Green energy” sounds benign, but the development of needed materials can be quite environmentally damaging. In the case of a REE mine at Sheep Creek, location context is a critical element in the analysis. The mine would be at the very headwaters of the Bitterroot River, so water pollution could contaminate the length of the river clear to Missoula and beyond (like Butte on the Clark Fork).

There would be heavy metals, acid drainage, arsenic, radioactive thorium and possibly asbestos released from the bedrock. (The mineral actinolite is present in significant quantities. Actinolite can occur as asbestos.)

Water contamination by ammonium leaching agents could contribute to nutrient (Nitrogen and Phosphorous) pollution of the Bitterroot River, which supports threatened bull trout, westslope cutthroat trout as well as a very lucrative fishing industry. Nutrient pollution can lead to excessive algae growth and eutrophication.

Painted Rocks reservoir, a few miles below the mine site, provides reserved instream flow to the West Fork during late-season low flows. This supports irrigation and helps make the West Fork fishery a stronghold for survival by adding cold water from the reservoir to the late season warmed river water. Pollution of Painted Rocks by would be a big risk to existing locally owned, proven-sustainable, fishing industry as well as irrigated agriculture.

The Sheep Creek REE claim block spans a wildlife linkage corridor along the MT/ID divide connecting the Continental Divide corridor with the River Of No Return and Selway Bitterroot Wilderness right at a bottleneck in the Allan Mountain Inventoried Roadless area. The corridor is essentially Broadway for grizzly bears heading into the US Fish and Wildlife Service designated Bitterroot Grizzly Bear Recovery Area. Many other iconic species reside in or move through the Allan Mountain IRA, including wolverine, rocky mountain sheep, mountain goats, and Northern Rockies fisher.

The USFWS grizzly bear recovery plan depends on grizzly bears wandering into the Bitterroot Recovery Area. The connectivity corridor at stake is the only existing wildland corridor through the highly populated Bitterroot Valley.

Road building for drill rig access to the over 40 dikes containing REEs scattered across the claims would severely damage the connectivity corridor. At this crucial time for grizzly bear recovery wildlife displacement would begin immediately at a very strategic and vulnerable location and last for decades, even from “reclaimed” roads. Thus, even if the Sheep Creek mine does not pan out the way the corporate owners seem to want, there could be long-lasting damage to rare public values simply from exploration activities.

Exploration drilling could also contaminate ground water at the Bitterroot headwaters. Citizens should insist the BNF require the Company to characterize both the area ground water as well as Sheep Creek surface flow through monitoring prior to any drilling to develop a base line before any water contamination can occur from exploration road sediment, drilling materials, solvents, or fuel storage.

We expect the Company will soon submit an exploration Plan of Operation (PoO) to the BNF and MTDEQ. The permitting process could be quite abbreviated, so concerned citizens need to be prepared to act quickly.

6/2023 update

The Notice of Intent for non-mechanized sampling is available.

If you signed up for info from Dan Pliley and did not receive the Notice of Intent, please let him know that you did not receive it. Daniel.pliley@usda.gov

[NOI June 2023 link](#)