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Comments:

July 16, 2022

Attn: East Boulder Mine Amendment 004 EIS

C/O: Robert Grosvenor

CGNF, Gardiner Ranger District

P.O. Box 5

Gardiner, MT 59030

Re: East Boulder Mine Amendment 004 EIS Scoping Comments

Dear Mr. Grosvenor,

My wife and I live on the East Boulder about 3 miles below the East Boulder Mine. We are the last year-round residents on the East Boulder. We purchased our property in 2019, built a home and have lived here ever since. We purchased the property knowing the mine was operating, knowing of the Good Neighbor Agreement and all the benefits of the mine for Sweet Grass County. Overall, the mine has been a good neighbor, and we want to see it continue to be successful.

On June 24, 2021 we, along with many of our neighbors on the East Boulder and Main Boulder, were invited to a meeting at the McLeod firehall hosted by the Stillwater Mine. The purpose of the meeting was to make the attendees aware of the proposed Lewis Gulch tailings storage facility (TSF), the Dry Fork waste rock storage facility and the potential impacts of a breach of either or both of those facilities. This was the first my wife and I had heard of these proposed changes (probably the first any of the attendees had heard of the proposed changes), and to say that it was an eye-opener would be a understatement.

First the size of the impact area was shocking. When we purchased our property in 1999, the tailings storage facility probably covered less than 20 acres. At the 2021 firehall meeting the mine staff indicated that the current tailing storage facility was about 80 acres in size and the mine had already received approval in a previous amendment (the Stage 6 TSF Expansion) to raise the height of the existing tailings dam by an additional 14 feet. We were not told what the capacity of the existing TSF would be after the 14 foot addition to the dam. When asked how large the tailings storage facility would be if the proposed changes were approved, we were told about 100 acres. I assumed this meant a combined total of about 100 acres. It turns out this was not an accurate portrayal of the proposed expansion. According to the actual proposal, the mine was applying to increase its TSF footprint by 87.81 acres (the Lewis Gulch TSF) which would be capable of storing 5.8 million cubic yards (156+ million cubic feet) of mine waste (tailings). This would be in addition to what was being stored in the already existing TSF. The proposed Dry Fork Waste Rock Storage Area would store an additional 5.4 million cubic yards of waste rock. The waste rock storage area and the tailings storage areas would be permanent, and would remain in perpetuity. The total area of disturbance (millsite, TSFs, waste rock storage area, topsoil storage areas, etc.) would increase in size from the current 249 acres to 723 acres. The most shocking part of the firehall presentation was the discussion of the possibility of a potential breach of the TSF which could result in the very rapid release of several hundred million cubic feet of tailings into the East Boulder River. The surge of flood water and tailings would rush down the East Boulder collecting trees, rocks, materials from the adjacent river banks on its way to the confluence with the Main Boulder continuing down the Boulder to the Yellowstone. We were left to speculate as to the devastation that the resulting flood would produce. Mine staff assured us that such a breach was extremely unlikely to occur since it would require a 1,000 year flood event and an earthquake of 7.0+ magnitude occurring simultaneously at the mine site to initiate the

breach. They assured us that neither of these events had ever occurred in this area.

However, it seems fair to point out that the June 12-15 period of this year (2022) saw unprecedented flooding across the Absarokas and Beartooths which led to flooding rarely or never before seen across many of the areas rivers and streams. A number of these flooding events were characterized by the US Geological Survey as a 1 in 500 year events; some suggested the unprecedented flooding were 1 in 1,000 year events. On June 13, 2022 the flow rate of the Yellowstone River at the Corwin Springs gauging station peaked at an all time record of nearly 50,000 cubic feet/sec (cfs). According to the mine's Dam Breach projections, a breach of the Lewis Gulch TSF could produce a torrent of water and liquid slurry (water/tailing mix) moving at a rate of over 200,000 cfs at a point 0.9 miles downstream of the potential breach site. That would be 4 times the discharge we witnessed on the June 13, 2022 Yellowstone River flood, and we probably all watched videos of the destructive power of that unprecedented flow. Houses, bridges, portions of highways and whole hillsides disappeared into the Yellowstone River. At the East Boulder campground (less than a quarter mile below our property boundary), the peak discharge following a breach of the TSF is projected at 141,843 cfs with a maximum change in depth of 24.3 feet. At the junction with Elk Creek 8.6 miles below the potential breach site, the flow would still be about 101,385 cfs (more than two times the Yellowstone's June 13 peak flow) with a maximum change in depth of 16.5 feet. The flow would continue all the way down the Main Boulder and into the Yellowstone River below Big Timber. At that point the discharge is projected to still be 40,391 cfs. Just for comparison, the record discharge recorded at the Big Timber gauging station was just under 10,000 cfs. What kind of damage could we expect from a flood of 4 times the strength carrying a variety of trees, logs, fences, boulders (large and small) and of course, lots of fine particle mine tailings. What would a flood of this magnitude carrying all the debris and mine tailings do to Big Timber's water supply. Other rivers and streams across the Beartooth Face were also impacted by the June 2022 flooding event. We watched the main street of Red Lodge transformed into a raging river taking houses and bridges. The Stillwater River in the vicinity of SMC experienced unprecedented flooding. If these flood events had more directly impacted the East Boulder, would we now be dealing with the after effects of a tailings dam breach?

I think it is also fair to point out that the East Boulder Mine is considerably less than 100 miles from the Yellowstone Basin, an area considered to be one of the most active seismic areas in the United States. According to the National Park Service, Yellowstone National Park is typically hit by anywhere from 700 to 3,000 earthquakes each year. The largest quake on record for the area was the magnitude 7.3 Hebgen Lake quake of August 17, 1959.

The Dam Breach Assessment supporting Amendment 004 does not identify the "...estimates of downstream consequences (loss of life, environmental, cultural, and/or economic values) within the inundation extents...". The January 27, 2020 mine document supporting the Stage 6 TSF expansion did produce a Risk Assessment including:

It is likely that all bridges crossing the East Boulder River downstream of the TSF could be overtopped if a breach were to occur.

Between 20 and 30 buildings/structures are located within the identified flood inundation zone. The potential loss of life due to the hypothetical dam breach could be in the order of 10 to 100 people.

The proposed expansion markedly increases the risks to everything in the inundation zone downstream of a breach. The EIS must examine in much greater detail all of these risks including potential loss of human life, livestock, damage to personal property, damage to critical infrastructure (roads, bridges, irrigation structures, city of Big Timber water supply, etc.). What are the economic impacts. The costs to the State and County and private property owners to replace/repair damaged/destroyed infrastructure will be enormous. Private property directly below the breach would become virtually without value. This all needs to be addressed in the EIS, and Montana DEQ and Custer-Gallatin National Forest need to consider opportunities to reduce, eliminate or mitigate these risks.

Mitigation could involve a variety of topics, but a downstream neighbor on the East Boulder submitted comments with regard to this proposal (Royer, L. June 23, 2022), and I would like to echo some of his comments:

"The Forest Service and the Montana Department of Environmental Quality should require the ultimate parent of the applicant to be made legally and financially responsible for any consequences relating to the operation of SMC.

The applicant should be required to fully disclose the extent of the insurance coverages relating to its operation. That disclosure should contain the amounts of coverage, the deductibles and the name of the insurer. The insurer should be required to be based in the United States and subject to the jurisdiction of the courts of the United States.

Once the extent of the insurance is determined to be adequate to cover all potential downstream damages that could result from the failure of the proposed Lewis Gulch slurry tailings operation, the applicant should be required to keep that coverage in place throughout the term of the operation. In the event that the applicant allows the coverage to lapse, the operating permit should be immediately revoked."

These measures would give some financial protection to the State, County, City of Big Timber and all the downstream landowners in the inundation zone.

Seeking opportunities to eliminate or at least significantly reduce the risk associated with a tailings dam breach brings up other options which the Montana DEQ and CGNF should seriously consider. Throughout this whole process we have been told by SMC that the preferred, safest method of confining mine tailings was the method being proposed for the Lewis Gulch TSF. Mine staff assured everyone at the meeting that they would be using state-of-the-art engineering in their tailing dam construction, the most "robust" construction standards in the industry. They repeatedly highlighted their use of the downstream method as being the safest construction method available. No other options were ever discussed at the firehall meeting, and nearly everyone at the meeting went away assuming that the slurry method of tailings storage was the only method available on this project.

It turns out this is not at all the case. Another viable option exists which must be given a hard look by the regulating agencies. The risk associated with the slurry method of tailings storage is the stored material is approximately 74% liquid by volume and will flow like water during a dam breach. Reducing the risk involves reducing the flowability of the tailings by reducing the moisture content to below 21% at which point the material will not flow but will act essentially like soil. A little research on tailings and tailings storage methods shows that there is a method that does exactly this, and it is already being used by mines around the world. The method has several names such as dry stack tailings, filtered tailings and dewatered tailings but the end results are the same - the tailings are reduced to a state where they will not flow.

The EIS must consider a dry stack/filtered tailings alternative to the proposed Lewis Gulch TSF. After a tailings dam failure at the Mount Polley mine in British Columbia in 2015, a panel of mine engineers issued a report (Expert Panel 2015) emphasizing the need for the mining industry to change its approach to tailings storage. They concluded that filtered tailings was the best available technology. There are several benefits to the filtered tailings method:

No need for tailings ponds or dams, therefore no risk of a dam failure

Small footprint. Filtered tailings can be compacted and would occupy significantly less volume than slurried tailings. This could extend the life of the Lewis Gulch tailings storage area by several years. In his July 15, 2022 letter to Mr. Grosvenor regarding the current project proposal, David M. Chambers, Ph.D. suggested that the use of filtered tailings could result in additional 10 years of life to the Lewis Gulch tailings storage area.

With the filtered tailings method there are no longterm water storage issues. Water generated from the filtering process is recycled to the processing plant.

Tailings can be reclaimed in stages, not all at once.

The filtered tailings process is a rapidly developing technology (Chambers, D. July 15, 2022 letter to Robert Grosvenor). The process is currently in use at a number of mines in North America (Greens Creek, Alaska; Raglan, Quebec, Canada; Eleonore, Quebec, Canada; Pogo, Alaska; Pumpkin Hollow, Nevada). "Dry stack and filtered tailings technology was endorsed in a 2020 study by MiningWatch, Earthworks and by more than 140 NGOs. The dry stack method is also lauded globally by the International Council on Mining and Minerals which sets the standards for the safest possible tailings management practices around the world (taken from 2021 fact sheet discussing the dry stack tailings process produced by the Twin Metals Mine in Minnesota)."

As currently proposed the Lewis Gulch TSF proposal should not be approved. There should be no storage of wet, slurried tailings allowed when a low risk, environmentally safe viable alternative exists.

Thank you for the opportunity to comment. I hope the regulating agencies will seriously consider the topics discussed above.

Respectfully,

Claire Simmons, Robyn Roberts  
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