The Arkansas Valley Conservation Coalition

August 31, 2021

The Arkansas Valley Conservation Coalition (AVCC) opposes the Designated Mining Regular (112d) Operation Reclamation Permit Application for Dawson Gold Mine in Fremont County, CO by Zephyr Gold USA Ltd. (Zephyr Minerals Ltd), submitted to the DRMS on June 30, 2021 (permit no. M2021046). We currently have 60 participants in the Coalition with 2-3 joining each day, primarily from Fremont County.

The planned gold mine is:

- 1.3 miles from Grape Creek, which drains into the Arkansas River on the west side of Cañon City
- 1.5 - 4 miles from the city limits and 3 subdivisions totaling 800+ homes
- 4 miles from downtown Cañon City

EXPERT ANALYSIS

Dr. Steven Emerman (Hydrologist) analyzed the permit application. He has a B.S. in Mathematics from The Ohio State University, M.A. in Geophysics from Princeton University, and Ph.D. in Geophysics from Cornell University. Dr. Emerman has 31 years of experience teaching hydrology and geophysics, including teaching as a Fulbright Professor in Ecuador and Nepal, and has 70 peer-reviewed publications in these areas. His full report on the risks to Zephyr's DRMS application is Addendum #1 to this letter.

He reports: "The application for the Dawson gold mine includes three fundamental flaws that require rethinking of the project from the very beginning. The first fundamental flaw is the underestimation of the water consumption of the gold mine by an order of magnitude. In summary, at the present time, there is certainly no assurance that mine dewatering could supply the probably necessary 100 gallons of water per minute. The predicted water consumption is 18.4% and 6.6% of the average for the gold mining industry, based on ore production and gold production respectively, even after adjusting industry averages for the reduction in water consumption resulting from filtered tailings technology. This is what is meant by a fundamental flaw that requires rethinking from the ground up. If there is no adequate source of water, then there is no way to construct a gold mine at the proposed location. It would be completely unacceptable for a regulatory authority to allow a mining project to go forward that was going to consume ten times as much water as it claimed that it was going to consume."

"The second fundamental flaw is the assumption that water could be endlessly recycled through the mining operation with no chemical water treatment and no adverse effects. These adverse effects arising from a build-up of the dissolved solids content of the process water could include precipitation of salts onto all contact surfaces, clogging of pipes, clogging of the filter presses, and most importantly, the potential inability of the process water to function for the extraction of the gold concentrate. Finally, there is the problem of what to do with all of the saline process water when the mine is closed and the recycling of water ceases. The introduction of chemical water treatment into the mining circuit is not a minor matter and requires rethinking from the ground up."

"The third fundamental flaw is the failure to acknowledge that the structural zone of the filtered tailings storage facility would constitute a dam and should conform to dam safety standards. This is not simply a matter of, say, the mining company agreeing to add a layer of rockfill as armor on the outer

embankment of the structural zone. Thus far, there has not even been any consideration of state, national or international guidelines for dam safety. On that basis, at the present time, there is no way to know whether it is even possible to construct a safe tailings storage facility at this particular location. As with the other fundamental flaws, the means for safe permanent tailings management needs to be rethought from the ground up."

We see a fourth fundamental flaw. Because the Dawson tailings sample size was limited to two samples, this results in a lack of knowledge of the acid-generating potential of the tailings. The source for this conclusion is from the GEM Services study appendix B dated June 2021 where it states: "Short term metal release was assessed using the shake flask extraction procedure (MEND, 2009) for the development rock and analyzing the filtrate from the two tailings samples by ICP-MS." How can Zephyr satisfy any of the many state requirements regarding prevention of acid mine drainage if they don't even know whether the tailings are potentially acid-generating?

Our request to DRMS:

Dr. Emerman's Recommendation:
"The recommendation of this report is that the application for the Dawson gold mine should be rejected by the regulatory authorities without any further consideration."

We Concur: There are many flaws in the permit application and risks that are not addressed or sufficiently mitigated. We strongly oppose the mining application. as it imposes huge risks to our water, safety, and pristine public natural areas which are of outstanding beauty and are highly valued by our community and visitors. The fact that Zephyr has not set aside a large amount of funds (contingency) to resolve significant problems (that almost always occur with larger scale, complex projects) is irresponsible. We respectfully request that this permit application should be denied with no deliberation.

RISK ANALYSIS

Devastating effects of mining activity could include drinking water pollution, surface water pollution, underground water pollution and depletion, fire risks, traffic safety, disruption to and displacement of wildlife, among other issues. Currently Grape Creek and the Arkansas River are healthy, world-class fisheries which sustain a large portion of our Fremont County recreation and lifestyle.

WILDFIRE RISKS

More than 800 homes lie within 1.5-4 miles east of the planned gold mine location, downwind (winds are normally westerly). Downtown Cañon City, a town of 17,141, is 4 miles away.

The planned gold mine area is a semi-arid region with abundant amounts of fuel for a wildfire. A single spark can ignite and destroy acres of forest, homes, businesses, and wildlife country.

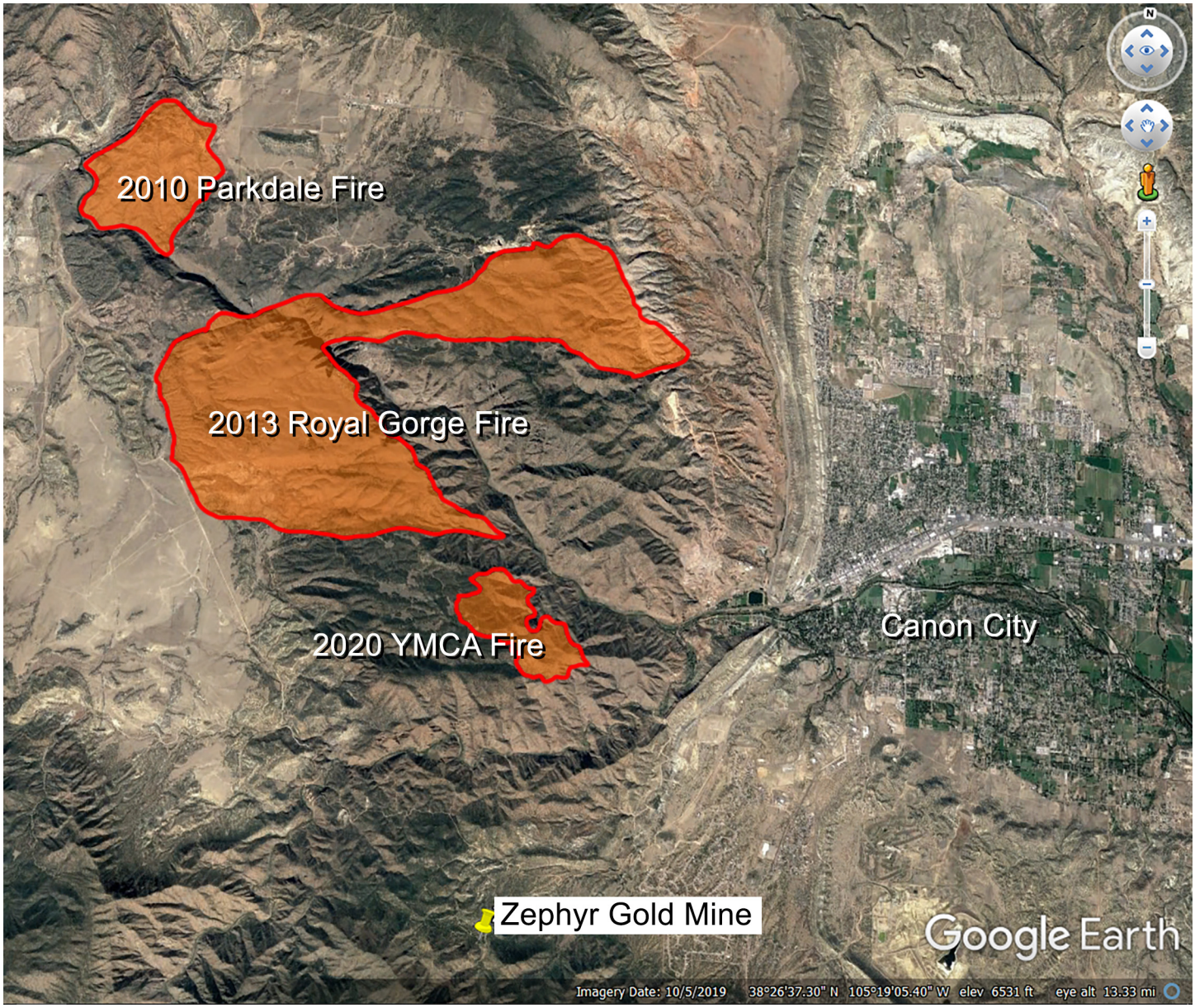
The application doesn't adequately address fire risks.

- The application states, "Bottom portion of the filtered water tank will be dedicated to storing sufficient volume of water for firefighting". (2.4.3.4.2) Sufficient? The amount of water stored and dedicated strictly for firefighting should be specified.
- The application states that a fire prevention plan will be submitted. However, there is no fire prevention plan currently included. The risk of wildfire in this region is so severe that absence of a fire mitigation is irresponsible. DRMS must insist on a detailed plan or reject this application outright. The mine location is in a semi-arid juniper forest, on rugged terrain which is essentially a tinder box. With 13,000 pounds of explosives (replenished per week) and 8,400 gallons of diesel fuel onsite, and with no established fire protection plan, a fire could quickly explode into an inferno that destroys an entire region. Given the catastrophic possibility of fire, promising a fire prevention plan will be included is unacceptable.

On August 14, 2020, Zephyr Minerals published "Questions and Answers" in the *Canon City Daily Record*. The subject was the recent YMCA Mountain Fire. The Zephyr response was, "Water will be immediately available for fire suppression" and “Had Zephyr been exploring at the time of the YMCA fire, both the helicopter and the water resource would have been made available to fight the fire.” (Full article can be found here: https://07e61cc3-40ec-43a6-91ee-2cc88384eee0.filesusr.com/ugd/80db19_c34b3deb05f141fd8c6010affaf7ce5e.pdf

These comments indicate that Zephyr Minerals does not comprehend the wildfire risk, does not take it seriously, does not understand what it takes to fight a fire, and does not have an adequate fire mitigation plan.

In recent years, three wildfires in Fremont County burned near the proposed mine location. All of the fires required national-level multi-agency wildfire response and 5-8 days to contain.



Parkdale Fire, Human-Caused

- Started Monday, June 21, 2010; Contained June 26, 2010
- 629 Acres burned, one house and barn destroyed, one house and barn damaged

- The cost of fighting the fire was estimated to be over one million dollars, *KKTV 11 News*, June 24, 2010.
- Peak Resources: 275 Personnel; nine crews; two camp crews; 15 engines; one large air tanker; two single-engine air tankers; and three helicopters (two large and one small).
- Quote: "While the terrain is treacherous enough to make fighting the fire difficult, the vegetation fueling the fire is compounding it. Pinon Juniper trees burn very quickly and with extreme heat. Pinon Junipers also frequently throw embers when they burn, and when picked up by the wind, they can spread a fire very quickly." A nearby homeowner described the fire in the early afternoon hours, "I could see huge pine trees going up, you could see the flames from our house, it was just devastating! The whole mountainside was covered in flames." (*KKTV 11 News*, June 22, 2010)

Royal Gorge Fire, Human-Caused

- Started June 11, 2013; Contained June 16, 2013
- 3,218 Acres burned, 48 of 52 structures destroyed at the Royal Gorge Bridge & Park
- We do not know the cost to fight the fire. Following are some statistics about the rebuild.
    - Estimated cost to hydro-ax the burn scar and reseed was $278,000, *Canon City Daily Record*, July 17, 2013.
    - Estimated damage to the park, including lost revenue, was about $35 million, *Canon City Daily Record*, August 13, 2013.
    - On the human side, about two dozen full-time employees were laid off. Some had been with the company for 20-30 years. *Canon City Daily Record*, December 3, 1013.
- Peak Resources: 384 personnel including - Rocky Mountain Area Incident Management Team B, 2 Type-1 crews, 8 Type-2 crews, 1 Type-1 helicopter, 1 Type-3 helicopter, 14 engines, 3 dozers, and 7 water tenders
- A change in wind direction (from westerly to eastward) is all that saved the entire region.
- Quote: "The Royal Gorge Fire was among four wildfire blazes in Colorado, putting a strain on firefighting resources. The fire burned a distance of 4.5 miles towards Canon City by the end of the first day." (*KKTV 11 News*, June 22, 2010)

YMCA Mountain Fire, Lightning-Caused

- Started July 8, 2020; Contained July 16, 2020
- 303 Acres burned, no structures were lost
- Peak Resources: 141 Personnel; single-engine and larger air tankers dropping retardant; four-five hand crews working the retardant line; multiple helitankers and helicopters with water buckets making water drops
- Quote: "The fire is on steep, rugged terrain on U.S. BLM lands in the Grand Canyon Hills area between Temple Canyon and the Royal Gorge Bridge." (*La Junta Tribune Democrat*, July 10, 2020)

The 2014 Community Wildfire Protection Plan, produced largely by the Cañon City Fire District, states:

> "Low fuel moistures and low relative humidity are common, along with high winds."
>
> "Fires originating in or near the community are of most immediate concern, but fires starting well
> beyond the boundaries of the planning area can have profound effects. Rapid rates of spread (approximately 4.0 miles per day) and long distance spotting (starting a new fire by windblown embers) are the norms for fires in the vicinity."
>
> "Spot fires will likely ignite up to a half mile from the flaming front. Crown fires are likely to spread at 0.34 miles per hour."

Full document can be viewed here: https://07e61cc3-40ec-43a6-91ee-2cc88384eee0.filesusr.com/ugd/80db19_46eb5b7beccb4f58afd123a61f14bb75.pdf

In the August 20, 2021, *Canon City Daily Record* interview, Will Felderhof, executive chairman for Zephyr Minerals, stated, "I don't think there are any fires attributed to modern mining that I can recall."

- A publicly available geospatial data suggests otherwise. This data is generated by the Forest Service. The specific dataset reviewed is the Fire Perimeter data for the entire United States. Within this data, we found 70 fires dating from 1919 through 2020 that have a word associated with mining in their name (Mine, Rock Quarry, Gravel Pit, Coal Seam, Oil Field). Click HERE to read more.

- While the annual number of mine fires continues to decrease, mine fires remain a significant problem. For instance, for the years 2010 and 2011, there were a total of 89 metal/nonmetal fires. The main causes of mine fires include flame cutting and welding operations, friction, electrical shorts, mobile equipment malfunctions, and spontaneous combustion. Source: www.cdc.gov/niosh/mining/topics/fires.html

Clearly Mr. Felderhof is downplaying the risk of fire being caused by/related to a mining operation.

Should a wildfire cause damage, the community would subsequently be faced with flooding over the mine site, exposing toxic materials which are then washed downstream. This occurred in Colorado after the massive Front Range floods of 2013, when dozens of historic mine sites were flooded and sediments were carried off-site.

Breathing smoke from wildfires is a public health issue, as Cañon City has experienced first-hand this summer. People have been affected by smoke originating hundreds of miles to the west (California, Oregon). On July 7, 2021, Denver had the worst air quality of any city in the world due to western fire smoke. Not only would a wildfire affect the air quality and health of Fremont County citizens, but it would also endanger others beyond the County.

WATER RISKS

Given that a gold mine will consume the precious water that life is based on,
deny this permit.
Life needs water, not gold.

Risks to water come in two forms: pollution and depletion. Pollution risks cover such things as tailings breach, chemical toxicity, underground water contamination, and long-term pollution of water that collects in the mine after end-of-life. Depletion risks include such things as water consumption vs. usage, potential Grape Creek and Arkansas abnormal water levels and temperatures, and potential long-range impacts such as what happened at the Gold King mine in 2015 where the Animas River was contaminated by a release of contaminated water from the retired mine.

Water Depletion Risks:

Dr. Emerman's relevant conclusions:

#2 The predicted water consumption of 9.8 gallons per minute is 18.4% and 6.6% of the average for the gold mining industry, based on ore production and gold production, respectively, even after adjusting industry averages for the reduction in water consumption resulting from filtered tailings technology. A more reasonable water consumption would be 100 gallons per minute, which would need to be supplied from groundwater.

#3 The predicted regional drawdown from dewatering the underground mine did not take into account the additional groundwater that would be pumped from a supply well. The dewatering calculation also did not consider the long-term impacts of dewatering or the time required to restore the equilibrium of the groundwater system.

#5 There is no mention of the possibility of water treatment for the water that is recycled through the mining operation and no analysis of the increase in the dissolved solids content of the process water that could occur due to recycling without treatment. In fact, saturation of the process water could result in precipitation of salts on all contact surfaces and in the tailings filter presses, which would render the filter presses non-functional. In addition, there is no discussion as to how the process water could still function to extract the gold concentrate with a high dissolved solids content.

Other Observations:
The Mining Permit, Appendices, Will Felderhoff, and the 2017 Technical Report are vague and in fact contradict each other.

The mining permit claims:

2.7.7 … “During mine operation, the process will mainly rely on the recycling of water with the water supply well used to top of[f] the potable supply and the reclaim process water tank. The mine dewatering will only be used to top of[f} the reclaim process water tank.”

6.4.21(8) …” The Dawson Property mine dewatering is estimated to potentially be as high as approximately 80 gpm initially, but will more likely only be on the order of 55 gpm, especially once the total depth of the mine has been reached and dewatered using ongoing dewatering operations. These projected rates may overestimate required dewatering rates if the fractures encountered by the mine are not significantly connected. If there is limited interconnectedness of fractures encountered by the mine, dewatering rates may be significantly less. Mine water will accumulate in the bottom portions of the mine and be pumped to the Dawson Property mine portal. This discharge will mostly be used within the mine facilities, but some will be discharged to the surface and is subject to Colorado Department of Public Health and Environment (CDPHE) discharge permits. Water pumped from the mine will ultimately be discharged to surface drainage systems after flowing through a sedimentation pond. The local stream drainages the sedimentation pond overflows to is a dry gulch locally named Dawson Gulch. Dawson Gulch is tributary to Grape Creek and the Arkansas River, but rarely flows with flow mostly limited to during and immediately after large precipitation events.”

2.7.1… “Based on the modelling investigation ground water level impacts potentially resulting from dewatering were limited to no more than 5 feet at a distance of approximately 1.1 miles from the mine assuming interception of ground water and constant dewatering operations over the life of the mine. Wells and surface water features outside of this approximately 1.1-mile radius will essentially not be impacted by ground water level changes caused by the mine dewatering."

The 2017 Technical Report (which can be provided) states: “the plant will require 135 gpm of process water to operate while over 90%recycle rate will minimize fresh water usage. It is estimated that the mine will supply 3.6 gpm of water in the form of ROM moisture and mine water, and 6.2 gpm of fresh water will be required for cooling, reagent mixing, process make-up, and potable water purposes throughout the plant. Drinking water will be hauled in from the nearby town.” The relevant point is that 3,258,720 gallons of fresh water will be consumed annually (6.2 gallons * 60 minutes * 24 hours *365 days) from underground sources.

Mr. Will Felderhoff stated in his August 21 report with Carie Canterbury: “Our plant uses water, but it’s all recycled water,” Felderhof said. “We’re not taking water away from the citizens. If anything, we might have some excess water and what would be released into the environment would go into a sediment pond so there’s no sediment coming out of it and water coming out of it would be cleaner than what comes out of the tap.” This is the same sediment pond that water left over from processing which includes the following chemicals: Potassium Amyl Xanthate, Methyl IsoButyl Carbinol, and Generic anionic emulsion flocculent. Note also that the 2017 Technical Report states: “Drinking water will be hauled in from the nearby town.” Apparently the mine workers will in fact not want to drink water that is “cleaner than what comes out of the tap”.

Appendix L is the MODFLOW model “focuses on the impact to ground water level elevations in the hard rock and Dakota formation from the dewatering that will occur during mining.” It has the following two summary points:

- Dewatering of the mine may reduce water level in the hard rock up to 285 feet at the mine location and drawdowns greater than 5 feet may extend distances up to 1.1 miles from the mine.

- Dewatering of the mine may reduce water level in the Dakota formation up to 50 feet at the mine and drawdowns greater than 5 feet may extend distances up to 0.9 miles from the mine.

A local geologist has stated that the underground water sources today supply some undetermined amount of water to Grape Creek and the Arkansas River. This helps maintain water levels and temperatures of the creek and river. He believes it is possible that the mine's consumption of water could reverse that flow: i.e. to fill an underground void, water could be drawn from the creek and/or river, further depleting water resources.

The above analysis is acknowledged in the permit application. The following text is from section 2.7.1 of the application; "The mine is expected to intercept some ground water within that material and will be dewatered to allow for mining. Accordingly, the mine does have the potential to impact ground water systems in the vicinity of the proposed mine as a result of the mine dewatering in the form of water level changes in the aquifers. The ground water level changes have the potential to indirectly impact surface water systems **in the form of stream depletions**."

Conclusions and objections:
Zephyr has not accurately stated its water consumption from underground sources, has an insufficient method of monitoring water depletion, and it does not know how water depletion will be impacted.

Which amount of ground water will be consumed: 80 gpm or 55 gpm or 6.2 gpm or zero gpm (as Mr Felderhoff implied)? Let’s assume groundwater depletion is 55 gallons per minute (gpm). This is 29,908,000 (55 gpm * 60 minutes *24 hours * 365 days) gallons consumed per year of fresh, underground water that would feed their 65,000,000 gallons of water used in the processing plant.

The Penn State Extension (Water System Planning: Estimating Water Needs (psu.edu)) states: “For most single-family homes, a minimum flow of 6 GPM is suggested from a well or spring. This flow would provide 360 gallons of water each hour, which would be sufficient to meet most home water peak demands.” This means the mine would consume approximately 10 times the underground water of a single family home.

Water is precious and becoming even more precious every decade. All creatures on earth depend on water and none depend on gold. If the water consumption models are correct and dewatering results in a 5 foot drop in the underground water level, that's 5 feet of fresh underground water that will never be replenished.

Water Pollution Risks:
U.S. Gold Mines: Spills & Failures Report surveys federal and state data and news reports to compile operating records of 27 operating U.S. gold mines accounting for 93% of national gold production. The study shows:

- Gold mines always spill - Gold mines responsible for 93% of U.S. gold production have accidentally spilled cyanide, mine waste, diesel, or other hazardous materials.
- Gold mines almost always pollute water - 74% of operating gold mines polluted surface and/or groundwater, including drinking water.
- When gold mines don't pollute water, it's almost always because there's no water nearby - of the mines that didn't pollute water, only one had a perennial stream in the project area.

Source (2017): New Study: 74% of U.S. gold mines pollute water - Earthworks

So why would this prospective mine be any different than 74% of the gold mines studied? Answer: it is likely that the proposed mine WILL cause some level of pollution of our most valuable resource - water.

Below are the faults in the permit and risks associated with water pollution.

Dr. Emerman's relevant conclusions:

#4 There is no plan for the treatment of mine water before it is released into the environment.

#6 The application never uses the word "dam" and does not recognize that the structural zone of the filtered tailings facility would constitute a dam that should conform to dam safety standards.

#7 The structural zone/dam would be constructed using the upstream method in which the dam is built on top of the lightly-compacted tailings that it is confining. In the event of the liquefaction of the tailings, the dam will collapse into the underlying tailings. For that reason, the method of upstream construction is illegal in Brazil, Chile, Ecuador and Peru.

#8 There is no consideration of the susceptibility to liquefaction of the lightly compacted tailings confined by the structural zone or the circumstances under which liquefaction could occur.

#9 The documents from Zephyr Minerals Ltd include no consideration of the consequences of failure of the filtered tailings facility. According to a statistical model of past tailings dam failures, following failure of the tailings dam at the Dawson mine, under the most-likely scenario (loss of 35% of the stored tailings after 5 years of operation), the tailings will travel 11,905 feet during the initial runout. Under the worst-case scenario (loss of 100% of the stored tailings after 5 years of operation), the tailings will travel 37,098 feet (over 7 miles) to Grape Creek and then to the Arkansas River and through the center of Cañon City during the initial runout. Subsequent normal fluvial processes will transport the tailings indefinitely down the Arkansas River

#10 Based on Colorado, as well as most national and international dam safety standards, and the potential for loss of human life and habitat destruction following dam failure, the filtered

tailings facility should be designed to withstand at least 90% of the Probable Maximum Precipitation (PMP).

#11 Although the static stability analysis of the filtered tailings facility indicated an acceptable factor of safety, all geotechnical input parameters were assumed without justification. The tailings densities were based on measurements on tailings samples from a different ore deposit (Windy Gulch), an assumed ability to compact the tailings to 95% of the maximum density within the structural zone, and an apparent confusion between dry and moist unit weights. There was no mention of the assumed height of the water table or any discussion of the water table height that would result in dam instability or the circumstances under which such a water table height would occur.

#12 The diversion channels for the filtered tailings facility would be designed to accommodate a 24-hour storm with a return period of 10 years during mine operation. On that basis, the probability of rewetting the tailings by runoff would be 10% in any given year of mine operation and 41% over the five years of mine operation. Following mine closure, the diversion channels would be reconstructed to accommodate a 24-hour storm with a return period of 100 years, so that the probability of rewetting the tailings by runoff would be 1% in any given year of the indefinite period of mine closure. There is no analysis of the consequences of rewetting either in terms of dam stability or increasing the susceptibility of the tailings to liquefaction.

The design of the channels to accommodate a 24-hour storm with a return period of 100 years after mine closure means that, in any given year of the indefinite time period following mine closure, the probability of overtopping of the channels will be 1%. On that basis, the probability that overtopping of the channels will occur at least once during, say, the next 60 years (two human generations), is 45%, so that overtopping of the channels will essentially be an expected event for the grandchildren of the current residents of Cañon City.

As before, the available documents include no discussion of the consequences of overtopping of the diversion channels, including possible impacts on the stability of the filtered tailings facility or the possibility of liquefaction of the lightly compacted tailings. In summary, the proposed water management infrastructure for the filtered tailings facility is entirely inadequate.

...the method of upstream construction is the most dangerous because, if the underlying tailings undergo liquefaction, the dam will simply fall backwards and downwards into the liquefied tailings, even if the dam itself does not liquefy. (P42)

The filtered tailings facility crest would be 6495 feet, 6523 feet, and 6541 feet after one, three, and five years of operation, respectively (see Figs. 11-12). Based on a minimum elevation of 6420 feet for the filtered tailings facility ..., the tailings dam heights would be 75 feet, 103 feet, 121 feet, and 153 feet for the one-year, three-year, five-year, and ultimate configurations, respectively ....

Although the water balance diagram ... shows a “Water Treatment Plant” before “Treated Water to Discharge,” the available documents do not include any plan for a water treatment plant, including no discussion of the contaminants that would need to be removed or how they would be removed. (P37)

In other words, the main body of the application (Environmental Alternatives, 2021a) states categorically that no water treatment will be needed, while the appendices (Environmental Alternatives, 2021b) see the need for water treatment as a later decision to be decided based upon the results of water quality monitoring. (P38)

The mine will create a permanent pool underground. As blasting is underground, energy will be concentrated and not dispersed. Pipelines in underground mines and underground mining are actually dependent on keeping the surrounding rock structurally intact. However, the result of blasting and mining does almost inevitably result in huge impacts due to the disruption of hydrogeology and the creation of voids, both of which can have surface impacts. These impacts can occur immediately or over time.

Our water pollution summary and conclusion:

Zephyr plans to use a very high-risk method of upstream construction for the filtered tailings. Heavy rains (similar to July 23, 2018) could cause liquefaction of the tailings stack and release chemically treated tailings into Grape Creek and then the Arkansas River. Where is the water treatment plant? Since tailings densities were based on measurements on tailings samples from a different ore deposit (Windy Gulch), the application's conclusions are not valid.

It makes no sense that any government agency would be OK with this risk given the need for consumable water and the absence of any need for gold.

RECREATION

Fremont County prides itself on its efforts to change the area's reputation from "mining and prisons" to a tourism and recreation center. Over the past 10+ years, the County, City, and other entities (e.g. Fremont Adventure Recreation [FAR], Bureau of Land Management [BLM]) have worked very hard and invested funds toward this goal.

The potential mining operation puts our recreation opportunities along the Grape Creek and Arkansas River corridors at risk. The Grape Creek area is a favorite spot for outdoor activity, including hiking, cycling, and equestrian trails, as well as fishing. Local people and others who travel a considerable distance cherish the quiet, scenic, natural landscape and the pristine features of the area. It is not uncommon to meet people who have traveled to Ecology Park from Boulder (a solid three hour drive), Denver, Colorado Springs, Pueblo and even the western slope just to be here. The hiking and bicycling trails in the area are beginning to receive national recognition.

The mining operation puts our tourist industry at risk. As Grape Creek feeds quickly from the proposed gold mine location into the Arkansas River, whitewater rafting, a huge local industry, would be devastated should the Arkansas River become polluted.

South Cañon Trail System

The South Cañon Trail System includes 20.5 miles of hiking, cycling, and equestrian trails. Construction investment, not counting extensive volunteer efforts, totals $351,000; trail construction is an on-going endeavor. Trails have been carefully laid to cause minimal impact in unspoiled country. Two trails which are used extensively by hikers and cyclists lie extremely close to the planned gold mine property. The Hot Shot trail on Section 13 comes within a few hundred feet or less in at least 5 places, and the Hard Time Trail in Temple Canyon lies less than a mile away. The mine is visible from both trails. Noise from the mining operations would be amplified by the Wet Mountains from behind, altering a peaceful experience into one of constructing, blasting, hauling, grinding, crushing and other sounds which would emanate from a mine.

A hiking/equestrian trail leads to Grape Creek from Temple Canyon Road, a local favorite and a destination for many families with children. Disturbance to the riparian ecosystem of Grape Creek in the form of water depletion or water pollution would create a huge loss in this historic and beloved area.

Mining operations will negate the care that Cañon City, the BLM and FAR have taken to keep the human footprint in the Grape Creek area negligible. Many people would be affected in this one area by mining.

Fishing
Grape Creek is well known for providing local anglers and tourists with opportunities to catch healthy rainbow and brown trout. The wilderness character brings return tourism and long-term economic stability for outfitters and businesses. Mining operation noise would severely affect the joy of fishing in the Grape Creek area and would have a negative economic impact.

Any water pollution and any water depletion in Grape Creek will affect the fishing habitat and population. We already face statistically hotter summers than in the recent past, something we have no control over. We do, however, have control over approval of a gold mine that risks damage to this world-class fishing area.

Mining activity will create unavoidable disturbances and heavy truck traffic which will result in lower quality fishing, decreased recreational use, and less local spending.

Whitewater Rafting
The City and other entities have invested hundreds of thousands of dollars in recreational landscaping along the Arkansas River, promoting community and tourist enjoyment of this stunning natural resource. Some 11 whitewater rafting companies and their seasonal employees depend on a healthy Arkansas River for their livelihood.

According to the Arkansas Headwaters Recreation Area (2020 Total Commercial Use), using the pre-Covid 2018 figures, 218,120 people rafted with rafting companies bringing in $15,555,838 in gross receipts for the year. And while these figures include the entire 152 miles of Arkansas River rafting, certainly Fremont County rafting accounts for a large share of those receipts.

Tourism industry
All of the above bring in substantial tourist dollars for the Fremont County economy to sustain our motels, restaurants, shops, gas stations, local and state taxes, as well as providing income to our employee workforce.

The mining permit offers no assurances nor guarantees (reserved funds) that mining activity will not disrupt our recreation opportunities, and when a mining operation problem impacts the area, there is no recovery plan or financial relief plan.

INCREASED TRAFFIC
The proposed mining activity will include substantial increased traffic along Highway 50 (which flows through the entirety of Cañon City), to First Street, Mariposa and finally Temple Canyon Road. This will include haul trucks, mining operation suppliers and subcontractors, chemical and water and explosive delivery trucks, plus transport for up to 90 employees. This will impact the quality of our roads, noise pollution, dust-air pollution, and the safety of our residents and cyclists, not to mention the public's perception of the area, which can directly affect the tourism industry. Cañon City could lose population due to increased traffic alone for all the above reasons. Huge trucks rumbling on these narrow dirt roads and on the City streets will cause significant road damage.

Increased traffic, especially on Temple Canyon Road and on First Street, would significantly impact the safety of our community.

- First Street - a 2 lane quiet residential street with a steep hill coming down on an angle from up high. In addition, would heavy traffic cause foundation problems, cracking, or other structural problems in homes constructed in the late 1800s along the street?
- Temple Canyon Road, a narrow 1-2 lane dirt road with switchbacks, blind curves, drop offs, and waterboard surfaces, used extensively by cyclists to create a larger loop, and sometimes by a woman pushing a stroller (see the stroller here)
- Mariposa - a paved 2 lane country road with curves
- Highway 50 - a 4-lane major roadway through Cañon City, already filled with cars and trucks

On Temple Canyon Road, due to the narrowness of the road and the switchbacks, large trucks hauling heavy equipment vehicles to the planned gold mine must now unload heavy equipment about 1.5 miles from the planned gold mine turnoff, and the equipment must then be driven the 1.5 miles to the turnoff.

WILDLIFE

We are blessed with beautiful geologic surroundings, clean air, and a silence that only nature can provide. The planned gold mine area is in terrain filled with mule deer, mountain lion, black bear, bighorn sheep, wild turkey, raptors, resident and migratory trout, and other wildlife. In recent years the BLM and the City have worked on improving the Grape Creek riparian habitat.

Wildlife species in eastern Fremont County that call the Grape Creek and Arkansas River area home:

- Mexican Spotted Owl (on threatened and endangered species list)
- Arkansas Darter (fish) (candidate for threatened and endangered species list)
- Canada Lynx (on threatened and endangered species list)
- At least 28 migratory birds

On-going disturbance negatively impacts local fauna. A mining operation impacts the environment and is detrimental to wildlife.

No environmental impact analysis has been done and is not required because Zephyr's permit application is limited to land they own or control. As written, the permit application provides no assurances that the mining operation will not significantly impact the animal habitat and environment in our generation or future generations.

We want long-term protection for our regional wild lands and abundant wildlife.

RECLAMATION

Only $261,813 has been set aside for reclamation of the 'affected area'. These funds are expected to cover 82 acres. This allocation is highly underestimated and isn't adjusted for inflation.

The application does not address how reclamation will ensure that the 121 feet of tailings piles will not collapse under heavy rain, impacting future generations.

There is no allocation of funds to address unexpected depletion of surface or underground water, pollution of surface or underground water, fire, explosion, power outage, or other potential disasters. There is no safety net for the community.

Cañon City and Fremont County are not strangers to contamination from mining; we are well aware of being left with picking up the pieces. The Cotter Corporation Uranium Mill left a Lincoln Park Superfund site only 3 miles from the planned gold mine. This disaster contaminated water and killed people. This community has already been damaged from previous mining operations.

Regarding the Superfund site, could the groundwater intercept and pipeline conveyor system in place to protect the Arkansas River be impacted by blasting operations from the planned gold mine? Could issues arise from the very deep (approximately 1,700 feet) mine?

The Gold King Mine (San Juan County, Colorado) spill on the Animas River in 2015 created contamination reaching beyond Colorado, into New Mexico and Utah. We do not want our Grape Creek and Arkansas River to end up dead and orange.

ANTICIPATED ZEPHYR EXPANSION

Under Zephyr's consideration are mining prospects west of the Dawson Mountain location, crossing over Grape Creek and into the Grape Creek Wilderness Study Area. Wild Connections and other conservation groups, as well as many individuals, have contacted various agencies expressing opposition to these mining activities that could cause irreparable harm to wilderness values, the Grape Creek water table, and excellent wildlife habitat.

The two maps on the savefremontcounty.org website from the Zephyr Minerals February 3, 2021 presentation "GOLD RESOURCE GROWTH in Colorado" clearly show more Patented Claims and Unpatented Claims to the west of the current proposed Zephyr Gold Mining Operation.

From Zephyr's 2/21/20 announcement: "Zephyr Minerals Ltd. continues to advance its 100% owned high grade Dawson-Green Mountain Project in Colorado, USA. After expanding its land package to 1,385 hectares (3,430 acres) the Company plans to explore the entire 12.2 km (7.5 mi) mineralized trend using the Broken Hill Type deposit as an exploration model." Is the current application simply a foot-in-the-door approach, with Zephyr expecting easy initial approval with an equally easy future succession of approvals for expansion even deeper into the Grape Creek drainage?

Zephyr was formed in 2012 for the sole purpose of exploring minerals in our area. For 8 years Zephyr has gotten a permit and then expanded their exploration. They have grown from 988 acres in 2012 to 3,430 acres and intruded on a Wilderness Study Area. If not contained Zephyr will likely follow the established trend: get a permit for a small area (in this case even privately owned) and expand their operation through revisions to the permit into other unpatented or patented (non-owned and owned land respectively) claims closer to the Grape Creek Wilderness Study Area. The DRMS and County Commissioners need to recognize this trend and tighten their vigilance in order to preserve the entire area.

At 300 tons/day, at a grade of .27 oz/ton, at $1750 (price of gold/oz), Zephyr would bring in $141,750/day or $49.6M gross/year (300 x 0.27 x $1750 = $141,750 x 350 days/year = $49.612,500). The average life of a gold mine is 5-30 years. Zephyr claims this gold mine would operate for 5 years. Why would Zephyr go to all this effort for such a small amount of gold for only 5 years?

The mining industry doesn't have a good track record of environmental stewardship during operations and especially in post-operational cleanup and restoration. Past mining operations have left a legacy of unfunded environmental liabilities across the West which remain unmitigated. We tend to allow private entities their profit-making enterprises, shifting the risks and liability to the public.

CONCLUSIONS

The proposed gold mine lies immediately adjacent to 800+ homes and a heavily used recreational and environmentally sensitive area. Our local recreational opportunities add substantial and sustainable value to the local economy by attracting tourists from around the world and providing local residents with world-class outdoor activities. This area of land is worthy of preservation for our community, for future generations, and for the wildlife.

There needs to be a sizable reserve for unexpected mitigation. It shouldn't be left to the City, or the County, or the citizens to clean up a disaster not of our making.

The gold mining operation would have a devastating impact on the fragile natural environment in our community. It's an extractive industry with no sustainable benefits to the local community and economy. It would result in damage to the natural habitat as a result of soil and water contamination to Grape Creek, increased fire risks, and additional vehicular traffic creating a host of problems.

We see few if any benefits this planned gold mine would bring to Fremont County.

- Jobs. We anticipate few job opportunities for our local population, as the majority of the 90 new jobs will require a high mining skill set, leaving locals to fill a few administrative assistant and truck driving positions. Zephyr has not provided a list of positions to be filled nor their skill requirement level. Employment directly linked to the mine is dwarfed by the recreation tourism we already enjoy.
- Income for Fremont County. Zephyr has stated that $17M would be added to the area's economy without explaining how this number was determined and how much would actually remain in Fremont County. This is yet another vague statistic that means absolutely nothing relative to the area's economy. There is no accounting for the costs that would be incurred by the City and County to offset alleged income to our citizens. Examples include road maintenance and improvement, mitigation of environmental damage, and costs of fire caused by the mining operation.
- Profits will flow to Canada. This company has no roots or facilities in Colorado or the USA.

There have been a significant number of disasters from mining activities in Colorado. This fact cannot be refuted. Approving Zephyr Minerals permit application could or is likely to add to the list of unintended disasters. The four fundamental flaws in the application documented above and risks that endanger this pristine area require that DRMS deny this permit without any consideration of potential revisions.

Thank you for the opportunity to comment. Please let us know if we can provide any additional information or answer questions about our comments.

Respectfully submitted,

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