EARTHJUSTICE

July 15, 2022

Attn: East Boulder Mine Amendment 004 EIS
C/O: Robert Grosvenor
CGNF, Gardener Ranger District
P.O. Box 5
Gardiner MT, 59030

Re: East Boulder Mine Amendment 004 EIS Scoping Comments

Dear Mr. Grosvenor,

On behalf of Earthworks, Greater Yellowstone Coalition, and Montana Trout Unlimited, I submit these comments regarding the scope of the Custer Gallatin National Forest ("CGNF") and the Montana Department of Environmental Quality's ("DEQ") upcoming environmental review of Stillwater Mining Corporation's ("SMC") proposed East Boulder Mine Amendment.

Earthworks is a national non-profit conservation organization with an office in Montana. Earthworks is dedicated to protecting communities and the environment against the adverse impacts of mineral and energy development. The Greater Yellowstone Coalition is a regional conservation organization dedicated to protecting the lands, waters and wildlife of the 20-million-acre Greater Yellowstone Ecosystem of Idaho, Montana and Wyoming. Montana Trout Unlimited is the only state-wide grassroots organization dedicated solely to conserving and restoring cold water fisheries. It is comprised of 13 chapters representing approximately 4,500 members. These organizations have members or supporters who live, work or recreate within the region.

According to CGNF's scoping notice, the proposed amendment would enable continued platinum group metals extraction by nearly tripling the mine's mill site area disturbance from 249 acres to 723 acres, including authorizing the construction and operation of a new tailings storage facility and waste rock facility. The Dry Fork Waste Rock storage area and the Lewis Gulch tailings storage facility would store 5.4 million cubic yards and 5.8 million cubic yards of mine waste, respectively. These facilities would be constructed, and become permanent features, on public lands adjacent to the East Boulder River, which flows into the main Boulder, a tributary to the Yellowstone River. The Boulder River watershed, which originates in the Absaroka Beartooth Wilderness Area, is valued for its wild trout fishery, high-quality recreation and tourism, and the essential water that it supplies to agricultural interests and downstream communities.

In examining the impacts of the proposed amendment, Earthworks, Greater Yellowstone Coalition, and Montana Trout Unlimited urge CGNF and DEQ to analyze each of the items identified by CGNF and DEQ in their scoping notice as well as the alternatives and environmental impacts discussed below. Importantly, the proposed expansion places at risk public safety, the area's waterways and wildlife, and nearby homes and critical infrastructure.

NORTHERN ROCKIES OFFICE 313 EAST MAIN STREET BOZEMAN, MT 59715

T: 406.586.9699 F: 406.586.9695 NROFFICE@EARTHJUSTICE.ORG WWW.EARTHJUSTICE.ORG

Thus, it is vitally important that CGNF and DEQ fully consider opportunities to avoid or mitigate these risks, as discussed below.

These comments rely on and incorporate by reference the comment letters submitted by David M. Chambers, Ph.D., P.Geop., Steven H. Emerman, Ph.D., and Ann Maest, Ph.D. These expert comments, which were also submitted to you separately, are attached as exhibits to this letter.

I. THE EIS SHOULD CONSIDER A FILTERED/DRY TAILINGS ALTERNATIVE TO TAILINGS STORAGE

The Environmental Impact Statement ("EIS") should consider a filtered/dry tailings alternative to the proposed Lewis Gulch Tailings Storage Facility ("TSF"). The National Environmental Policy Act ("NEPA") "requires that alternatives … be given full and meaningful consideration." Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1245 (9th Cir. 2005) (quotation and citation omitted). Such consideration of alternatives to avoid environmental damage is the "heart" of NEPA review. Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008) (citing 40 C.F.R. § 1502.14). Similarly, DEQ's Montana Environmental Policy Act ("MEPA") implementing regulations require DEQ to analyze "reasonable alternatives to the proposed action, including … reasonable alternatives that may or may not be within the jurisdiction of the agency to implement…." ARM 17.4.617(5). MEPA's alternatives requirement ensures that agencies consider alternatives to a proposed project that will accomplish the project's goals while lessening impacts. See MCA § 75-1-201(1)(b)(v) (agencies must "study, develop, and describe appropriate alternatives to recommend courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources"). Under NEPA and MEPA, "[t]he existence of reasonable but unexamined alternatives renders an EIS inadequate." Ilio'ulaokalani Coal. v. Rumsfeld, 464 F.3d 1083, 1095 (9th Cir. 2006).[1]

Here, analysis of a filtered/dry tailings alternative to the proposed Lewis Gulch TSF is critical to consider methods to reduce the risk that mine tailings will harm water quality, public safety, and fish and wildlife habitat in the East Boulder, main Boulder, and Yellowstone rivers. According to the Chambers comments, "[t]he filtering approach and technology being used at Stillwater and East Boulder is probably decades old, and there are no technical assessments available to evaluate the viability and cost effectiveness of using a more modern approach to the use of filtered/dry tailings at Stillwater and East Boulder." Exhibit 1 at 1 (Letter from David M. Chambers, Ph.D., P.Geop, Ctr. for Sci. in Pub. Participation, to Robert Grosvenor (July 15, 2022)). A filtered/dry tailings alternative provides environmental and public safety benefits and is a feasible alternative to the Lewis Gulch TSF, as described by Chambers. Id. at 1-2.

[1] The Montana Supreme Court has held "that since MEPA is modeled after [NEPA], federal case law construing parallel provisions in NEPA is persuasive" in MEPA cases. Montana Wildlife Fed'n v. Montana Bd. of Oil & Gas Conservation, 2012 MT 128, ¶ 32, 365 Mont. 232, 244, 280 P.3d 877, 886 (citing Kadillak v. Anaconda Co., 184 Mont. 127, 137, 602 P.2d 147, 153 (1979)).

Such in-depth consideration of a safer alternative to the Lewis Gulch TSF is essential—recent research examining all serious tailing failures since 1915 demonstrates that the rate of serious and very serious tailings dam failures has increased globally:

> [T]he 100 years of TSF failures shows an emerging and pronounced trend since 1960 toward a higher incidence of "Serious" and "Very Serious" failures. That is, the consequence of loss is becoming increasingly greater. 49% (33/67) of all recorded Serious and Very Serious failures from 1940-2010 have occurred since 1990. Of all 52 recorded incidents cited, 1990-2010, 17 (33%) were Serious failures, i.e. large enough to cause significant impacts or involved loss of life. Another 16 (31%), were Very Serious failures, i.e. catastrophic dam failures that released more than 1 million cubic meters of tailings and in some instances resulted in multiple loss of life. 63% of all incidents and failures since 1990 were Serious or Very Serious. The total costs for just 7 of these 16 large failures was $3.8 billion, at an average cost of $543 million per failure. These losses, according to dam committee reports and government accounts are almost all the result of failure to follow accepted practice.[2]

This trend of increasing tailings storage facility disasters is particularly concerning given SMC's own dam breach assessment, which demonstrates that failure of the Lewis Gulch TSF risks significant inundation of the East Boulder River, main Boulder River, Yellowstone River, and the City of Big Timber, as well as critical infrastructure including numerous bridges along the Boulder River, High 298, and Highway 90. Expert comments on the design for the proposed Lewis Gulch TSF detail further significant concerns associated with the TSF as proposed. See Exhibit 1 at 2-4; Exhibit 2 at 1-34 (Letter from Steven H. Emerman, Ph.D., Malach Consulting, Robert Grosvenor (July 15, 2022)); Exhibit 3 at 1-11 (Letter from Ann Maest, Ph.D., Buka Environmental, to Robert Grosvenor (July 15, 2022)).

The feasibility of filtered/dry tailings facilities is well documented. Indeed, following the 2015 Mount Polley Tailings Dam failure in British Columbia, mine engineers issued a report emphasizing the need for industry to change its approach to tailings storage and identifying filtered/dry tails as best available technology.[3] It concluded that improving technology to reduce failures requires eliminating water both on and in the tailings: water on the surface, and water contained in the interparticle voids. Notably, the report also concluded that there are no overriding technical impediments to more widespread adoption of filtered tailings technology.[4] See also Exhibit 1 at 1-2.

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[2] Bowker & Chambers, *The Risk, Public Liability, & Economics of Tailings Storage Facility Failures* (2015), https://www.researchgate.net/publication/283321865_The_Risk_Public_Liability_Economics_of_Tailings_Facility_Failures.; see also WORD MINE TAILINGS FAILURES, *State of World Mine Tailings Portfolio 2020*, https://worldminetailingsfailures.org (last visited July 15, 2022).

[3] INDEPENDENT EXPERT ENGINEERING AND INVESTIGATION AND REVIEW PANEL, *Report on Mount Polley Tailings Dam Breach* (2015), https://www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf

[4] Id.

Due to environmental and public safety benefits and prior conclusions of technical feasibility, NEPA and MEPA mandate that the EIS must take a hard look at a filtered/dry tailings alternative to the East Boulder Amendment's proposed Lewis Gulch TSF. Ilio'ulaokalani Coal., 464 F.3d at 1095.

II. THE EIS SHOULD PROVIDE CURRENT, COMPREHENSIVE BASELINE DATA TO FULLY CHARACTERIZE THE RESOURCES AT RISK

The EIS should require extensive baseline data to characterize the existing environmental conditions including seasonal and annual variability. Under NEPA, baseline conditions must be described in the "no action" alternative and reflect the "status quo" against which the impacts of the proposed action and its alternatives are measured. Ctr. for Biological Diversity v. U.S. Dep't of Interior, 623 F.3d 633, 642 (9th Cir. 2010). "Establishing appropriate baseline conditions is critical to any NEPA analysis. 'Without establishing the baseline conditions which exist … before [a project] begins, there is simply no way to determine what effect the [project] will have on the environment and, consequently, no way to comply with NEPA.'" Great Basin Res. Watch v. Bureau of Land Mgmt., 844 F3d 1095, 1101 (9th Cir. 2016) (alterations in original) (quoting Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988)). As with NEPA, MEPA's implementing regulations require DEQ to describe "the current environmental conditions in the area affected by the proposed action or alternatives…." ARM 17.4.617.

Here, baseline data should include, but not be limited to, hydrological conditions, surface and groundwater quality, fish and wildlife and their habitat, streamflows, macroinvertebrates, algae/chlor-a concentrations, sediment levels, soils, air quality, cultural and archeological resources, and noise. See 40 C.F.R. 1502.21 (NEPA implementing regulations establishing requirements for incomplete or unavailable information).

A. Hydrology

In the area where hydrologic impacts may occur, the EIS should include baseline data to characterize gaining and losing reaches, hyporheic zones, stream temperature, spawning areas, groundwater upwellings and other important stream components. The EIS should also include a geophysical study examining surface water infiltration to groundwater. Exhibit 3 at 6. The EIS should consider these baseline conditions both today and in the context of future climatic changes.

B. Wildlife & Wildlife Habitat

The 2022 Baseline Environmental Survey ("BES") provided in the application is based on outdated information. It references an outdated Forest Plan, and development in 11+ acres of roadless area, whereas the scoping notice states that 35 acres of proposed facility development will be within the inventoried roadless area. The 2022 BES relies on outdated baseline data, including wildlife baseline surveys from 2015. The BES states that it did not use MWFP harvest or aerial survey data but does not specify why current baseline data wasn't collected.

C. Aquatic Resources

The BES states that no fisheries survey was completed. It concludes that the perennial stream in the eastern portion of A2 is not fish-bearing but provides no fish surveys to support that conclusion. The baseline data for the East Boulder is also outdated, with information provided from 2015 surveys.

The EIS should provide current baseline data to fully characterize aquatic resources in the project area, including fish, macroinvertebrates and mussels, etc. Many Montana rivers and streams are experiencing increased algal growth resulting from an increase in nutrient concentrations. Baseline data should include an analysis of periphyton, algae and chlor-a levels. The EIS should include a complete characterization of fish populations, including fish length frequency and biomass information. Length-frequency data, when plotted on a graph, are often used by fisheries biologists to evaluate whether changes are occurring within size classes of the species at any section from year to year. This, in turn, can be used to estimate whether changes to the populations' age structures are occurring. Fish habitat must also be characterized. Detailed baseline habitat measurements are necessary to allow accurate assessments of changes that would occur to trout macro and microhabitats in the event of a sediment release/tailings release from the mine. Baseline data must also be included along the mine transportation route and the full extent of waters that could be impaired from a tailings dam failure. Sediment levels should also be characterized.

D. Climate

The Climatological site conditions report, prepared by Knight Piesold, references outdated climate change reports (e.g., the 2007 Intergovernmental Panel on Climate Change). The EIS should include current climatological site conditions data, including data from 2022, given the extremely high precipitation/flood conditions this year.

E. Groundwater-Dependent Ecosystems

Baseline data are needed to characterize all groundwater-dependent ecosystems that may be affected by proposed mine activities, including seeps, springs, streams, wetlands, riparian areas, etc. Groundwater-Dependent Ecosystems ("GDE") are communities of plants, animals, and other organisms whose extent and life processes are dependent on access to or discharge of groundwater. According to the USDA Forest Service, "GDEs encompass many of the regionally-and nationally-significant ecosystems on NFS lands and are critical to management of many threatened and endangered species. In many watersheds, they support a disproportionately large percentage of the total biological diversity relative to their size."[5] GDEs include fens and other wetlands fed by groundwater, terrestrial vegetation and fauna sustained by shallow groundwater, ecosystems in streams, lakes fed by groundwater, caves, karst aquifers, aquifer systems, hyporheic and hypolentic zones, and springs.

[5] Christopher Carlson, PhD, National Groundwater Program Leader, U.S. Forest Service, presentation: *Groundwater Dependent Ecosystems on National Forest System Lands: Recognizing and Managing a Largely Overlooked Resource*.

This baseline analysis should include GDEs in the area overlying the new underground mining activities that will occur as a result of the proposed plan. Underground mining activities at other mines (e.g., Stillwater) have resulted in the dewatering of overlying waterbodies.

F. Surface and Groundwater Quality

The EIS should fully characterize pre-mining baseline surface and groundwater quality conditions and describe the impacts to surface and groundwater quality that have already occurred as a result of current mining activities. The EIS should include an analysis of the discrepancy between the previous EIS predictions and actual impacts as a result of mine operations and analyze the effectiveness of the various mitigation measures to prevent adverse effects. It should also include a map and full characterization of the groundwater mixing zone.

Comprehensive baseline data regarding surface and groundwater quality is particularly important, given known existing impacts on water quality due to mine operations and the significant potential for future impacts resulting from the proposed expansion. Groundwater nitrogen concentrations as well as the measurement of dissolved salts have increased during operations, compared to the baseline period.[6] In 2007, an untreated adit water release occurred, resulting in a sharp increase in dissolved salts and nitrogen as measured in groundwater monitoring well EBMW-6 located at the north embankment.[7] The release resulted in the exceedance of SMC's MPDES Permit No. MT0026808 limit of 30 pounds per day of nitrogen and exceedance of the Class I groundwater beneficial use criterion for electrical conductivity of 1,000 micromhos per centimeter.[8]

DEQ issued an Administrative Order on Consent ("AOC") on August 6, 2010 detailing violations and the need for SMC to implement corrective actions.[9] The primary source of nitrogen measured in groundwater was determined to be due to the leaching of explosives residues from waste rock construction materials. Following the identification of the source of nitrogen increases, SMC implemented nonpoint source control measures to reduce the amount of residual nitrogen on waste rock by 50 percent as well as the construction of an embankment underdrain capture system on the Stages 4 and 5 TSF foundation to reduce the source of nitrogen from reaching and impacting groundwater quality. A groundwater mixing zone was approved by DEQ under Operating Permit No. 00149 as revision MR-17-001 on September 6, 2017. As a result of corrective actions and approval of the groundwater mixing zone, the conditions of the AOC were satisfied, and the AOC was closed on January 10, 2018.

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[6] MONTANA DEP'T OF ENVTL. QUALITY AND U.S. FOREST SERV., *Final EIS: Stillwater Mining Company's Revised Water Management Plans and Boe Ranch LAD* (2012) ("DEQ and Forest Service 2012a"), https://deq.mt.gov/files/Land/Hardrock/Environmental%20Reviews/StillwaterMine_Appendices.pdf.

[7] Id.

[8] Id.

[9] MONTANA DEP'T OF ENVTL. QUALITY AND U.S. FOREST SERV., *Final EA: East Boulder Mine Stage 6 Tailings Storage Facility Expansion Project* at 3-30-31 (2020) ("DEQ and Forest Service 2020"), https://deq.mt.gov/files/Land/Hardrock/Environmental%20Reviews/Stillwater%2000149/Final%20EA/00149_2020_09_11_Final_EA_EBM%20TSF%20Stage%206_with_2020_11_03_Errata_508%20compliant.pdf.

Similarly, mine activities have already impacted surface water quality.[10] Baseline nitrogen concentrations average less than 0.14 mg/L. The synoptic studies reflect nitrate plus nitrite concentrations in the East Boulder River varying from 0.01 mg/L at EBR-003 with concentrations generally increasing downstream to 0.39 mg/L at EBR-005.

In short, the EIS must fully characterize pre-mining baseline surface and groundwater quality conditions, including a description of impacts to surface and groundwater quality that have already occurred as a result of current mining activities.

G. Geochemical Data

The geochemical characterization work conducted on Stillwater and East Boulder ore, waste rock, and tailings is woefully inadequate and fails to rationally characterize the acid-generating potential of the ore body. See Exhibit 3 at 1. The EIS should include all recommended characterization work detailed in the Maest comments. Id. at 1-4.

H. Geotechnical Data

It is not apparent that drill data has been collected along the northeast and northwest sides of the proposed Lewis Gulch TSF sufficient to adequately inform the modeling used to predict the stability of the TSF embankments. Exhibit 1 at 3. The EIS should collect additional drill data or provide a detailed explanation for why such data are not required. See id.

III. THE EIS SHOULD TAKE A HARD LOOK AT THE POTENTIAL DIRECT, INDIRECT AND CUMULATIVE EFFECTS OF THE PROPOSED PROJECT ON THE ENVIRONMENT

The EIS should look at the potential direct, indirect, and cumulative effects of the proposed action in accordance with NEPA and MEPA. See 40 C.F.R. § 1508.25 (requiring action agency to consider the full scope of activities encompassed by the proposed action); Kern v. U.S. Bureau of Land Mgmt., 284 F.3d 1062, 1075 (9th Cir. 2002) ("In determining the scope of the required NEPA analysis, an agency must consider not only the proposed action, but also … 'connected actions,' 'similar actions,' and 'cumulative actions.'") (quoting C.F.R. 1508.25(a)); see also Mont. Wildlife Fed'n, ¶ 43 (MEPA requires agency to "take a 'hard look' at the environmental impacts of a project or proposal); see also MCA § 75-1-201(1)(b)(iv)(A) (requiring comprehensive review of the "environmental impact of the proposed action"); ARM 17.4.609(3) (requiring "an evaluation of the impacts, including cumulative and secondary impacts, on the physical environment"). DEQ's failure to take a "hard look" at these impacts renders an EIS arbitrary and unlawful. Mont. Wildlife Fed'n, ¶ 43 (citation omitted).

A. The Analysis Must Encompass the Entire Potentially Affected Area

The analysis area should include the full length of the East Boulder River, based on the dam breach assessment, which identifies potential credible impacts that would extend along the entire length of the East Boulder River to the confluence with the Yellowstone River. The

[10] DEQ and Forest Service 2020, supra note 9 at 3-40–41.

analysis area should include the transportation route to the processing facility in Columbus, and the BOE Ranch LAD area. The analysis area should also include the lands above the expanded underground mine operations, given the potential for hydrologic effects/subsidence.

B. The EIS Should Consider the Effects of Spills and Other Releases

The EIS should include a quantitative spill risk analysis that considers the direct, indirect, and cumulative effects to the environment and public health and safety, including mitigation, response planning and monitoring programs. An analysis of Montana mines has determined that spills that were not predicted during the EIS process have resulted in significant adverse impacts to the environment.[11] A 2012 analysis of currently operating copper mines in the U.S., accounting for 89% of U.S. copper production, found that 100% experienced pipeline spills or other accidental releases and 28% experienced tailings dam failures.[12] A thorough analysis of direct, indirect and cumulative effects of spills should include spills/failures from the tailings dam, waste rock, pipeline spills, etc.

The EIS should consider the potential short-term and long-term direct, indirect, and cumulative impacts of associated with transport of all hazardous materials, including but not limited to fuels, processing chemicals, ore, blasting agents, reagents, or any other materials that could have an adverse effect if released into the environment. A similar analysis of Alaska mines has also made that determination, flagging the inadequacy of the most common model used for spill risk analysis.[13]

C. The EIS should Analyze the Potential Cumulative Effects from Reasonably Foreseeable Activities

SMC is proposing exploratory drilling at up to thirty-six drill sites over a six-year period in the Iron Creek and a single drill site in the area of the West Fork of the Stillwater River.[14] The potential impacts of these activities are reasonably foreseeable and should be considered in the cumulative effects analysis. Further, the SMC exploratory activities should also be included in this analysis,[15] and the Group 10 exploration.[16]

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[11] Laura Zanolli, *Track Record: Montana Modern Hardrock Mining: Water quality Impacts and Reclamation Bonding* (Sept. 2018), https://41p14t2a856b1gs8ii2wv4k4-wpengine.netdna-ssl.com/assets/uploads/2018/09/Montana-Predictions-Report.pdf.

[12] EARTHWORKS, *U.S. Copper Porphyry Mines Report, The Track Record of Water quality Impacts resulting from Pipeline Spills, Tailings Failures and Water Collection and Treatment Failures* (July 2012, revised Nov. 2012), https://earthworks.org/wp-content/uploads/2012/08/Porphyry_Copper_Mines_Track_Record_8-2012.pdf.

[13] Susan Lubetkin, *Alaska Mining Spills, A comparison of the predicted impacts described in permitting documents and spill records from five major operational hardrock mines* (Apr. 2022), https://earthworks.org/publications/alaska-mining-spills/.

[14] U.S. FOREST SERV., *Sibanye-Stillwater Mining Company's Iron Creek & West Fork Stillwater Exploration Plan of Operation*, https://www.fs.usda.gov/project/?project=48921 (last visited July 15, 2022).

[15] U.S. FOREST SERV., *Stillwater Mining Company's Benbow Exploration Portal & Support Facilities Plan of Operations*, https://www.fs.usda.gov/project/?project=45224 (last visited July 15, 2022).

[16] ASSOCIATED PRESS, *Federal Officials OK Drilling in Beartooth Mountains* (Feb. 10, 2020), https://flatheadbeacon.com/2020/02/10/federal-officials-ok-drilling-beartooth-mountains/.

D. The EIS Should Consider Impacts from Connected Actions, Including Extended Mining of the Underground Tunnels, Disposal of Wastewater, and Transportation for processing

The extension of the underground mine tunnels to produce ore and waste rock for processing and storage in the tailings and waste rock piles is a connected action that should be analyzed in the EIS. The EIS should analyze the potential impacts to surface water if the underground tunnels intercept fractures that divert water into the underground tunnels. Despite EIS predictions to the contrary, this problem has occurred at other Montana mines, including the Stillwater Mine.[17]

The transport of ore from the mine site to the processing facilities in Columbus is also a connected action that should be considered. Wastewater management and disposal at the Boe Ranch is also a connected activity that must be analyzed in the EIS.

E. The EIS Should Consider Impacts to the Following Resources:

1. Climate

The "Climate Change and Human Health in Montana" report released in January 2021 is an extension to the 2017 Montana Climate Assessment (Whitlock et al. 2017) which provided the first detailed analysis of expected impacts to Montana's water, forests, and agriculture from climate change.[18] The assessment divides the state into seven climate divisions. The East Boulder Mine, which is in Sweet Grass County near Big Timber, is located in the south central division found on the east side of the Continental Divide. The report documents a 70-yr warming trend since 1950 is evident across the state, with greatest warming in the south central climate division. Projections for the south central division indicate an increase of approximately 4.75°F annual average daily maximum temperature by mid-century (2050s). Days higher than 90°F are expected to increase 5 to 35 days per year by mid-century, especially in the southern part of the state. Frost-free days are predicted to increase by 24 to 44 days by mid-century. Precipitation across the state is expected to decrease during summer, but increase during fall, winter, and spring. By mid-century (2049-2069) in the south central division under business-as-usual emission scenarios, precipitation is projected to increase as much as 15 inches during the spring months. Interannual variability (amount of annual change in precipitation) is also expected to increase slightly (i.e., wet years would get wetter and dry years would get drier).

In 2018, the National Oceanic and Atmospheric Administration published Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, which includes a discussion of expected climate trends in the Northern Great Plains of the United States

[17] S. Blodgett & R. Kuipers, *Technical report on underground hard-rock mining— Subsidence and hydrologic environmental impacts: Ctr. for Sci. in Publ. Participation* 50 (Feb. 2002), http://www.csp2.org/files/reports/Subsidence%20and%20Hydrologic%20Environmental%20Impacts.pdf.
[18] Alexandra Adams, *et al.*, *Climate Change and Human Health in Montana: A Special Report of the Montana Climate Assessment* (2012), https://scholarworks.montana.edu/xmlui/handle/1/16028.

including Montana, where the Project Area is located.[19] This assessment projects the number of heavy precipitation events to increase. The assessment concludes that changes in extreme precipitation events are likely to overwhelm average changes in precipitation.

The EIS should evaluate the direct, indirect, and cumulative impacts of climate change, including impacts to stream flows, temperature, baseline data, aquatic life, fish, and wildlife, predicted source loadings, water balance and receiving water effects. It should consider the impacts of increased temperatures on revegetation and cover systems, and the potential for increased rate and severity of storms and alterations in precipitation patterns on mine infrastructure. The proposed activity would also contribute to the effects of climate change by generating greenhouse gas emissions. The EIS should estimate the potential amount of GHG emissions, and the potential contribution to climate change.

2. Water Quantity

The EIS should analyze the impacts of proposed activities to the East Boulder River and other surface waters, springs, seeps, wetlands, and riparian areas. It should also evaluate the potential impacts to hyporheic zones, gaining reaches of streams, and other stream conditions that could have an adverse effect on aquatic life.

3. Groundwater Dependent Ecosystems

Although these ecosystems occupy a small percentage of landscapes in the western U.S., riparian areas and GDEs provide disproportionately large ecosystem services such as water filtration, essential wildlife habitat, recreational opportunities, and flood control. The EIS should fully evaluate the potential effects of the project on groundwater-dependent ecosystems, including wetlands, seeps, springs, floodplains, and riparian areas.

4. Surface and Groundwater Quality

The EIS should analyze the potential impacts to water quality from the proposed activities, including but not limited to, accidental releases of process chemicals, fuel, mine tailings, process water, and any other potential hazardous material. It should recognize that human error is often a significant factor, regardless of mitigation measures. In addition to analysis of hazardous releases at the mine site, it should include the potential impacts of hazardous releases along the potential transportation routes.

The EIS should analyze the potential impacts to surface or groundwater quality associated with the failure to capture and control mine seepage, including seepage from waste rock and tailings, etc. The EIS should include an analysis of the failure rates of mitigation measures, particularly over the long-term (e.g., post-closure). It should also include the potential impacts associated with mitigation failures.

[19] Doug Kluck, *et al., Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment Vol. II, Chap. 22: Northern Great Plains*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN. (2018), https://nca2018.globalchange.gov/chapter/22/.

The EIS should evaluate the long-term potential for impacts related to the failure to contain metals or nutrient leaching from mine tailings and waste rock. The EIS should analyze the potential impacts to water quality from nitrogen-based blasting agents and consider alternative blasting agents.

The analysis should include the potential impacts from increased sediment and fugitive dust at the mine site and along the transportation corridor due to mine activities, including road construction, traffic, mine facility construction, tailings dust, ore transport, etc. It should consider the potential impacts to water quality and aquatic life from the use of dust controlling chemicals.

The EIS should analyze the potential impacts to the East Boulder River from stormwater releases that exceed the various stormwater design requirements, particularly in light of the increase rate of large storm events associated with climate change. The 2020 Water Management Plan states that the UCP is designed to temporarily store water that results from a 1 in 25 year, 24-hour precipitation event. For events larger than the 1 in 25-year precipitation event, water in excess of the storm storage capacity of the UCP will be conveyed from the pond via a Stormwater Management Spillway that will be sized to convey runoff resulting from a 1 in 200 year, 24-hour event (5.0 inches). According to the Water Management Plan, water passing over the spillway will discharge into an outlet channel that will convey water away from the pond onto the floodplain of the East Boulder River, where it will infiltrate or flow directly into the East Boulder River. The EIS must consider whether these assumptions are or may become obsolete in light of climatic changes. A presentation by BLM found that water management features at the Zortman-Landusky Mine, designed for a 100-year, 24-hour storm event, were inadequate, concluding that "the reality is that industry is making closure, reclamation and drainage treatment predictions based on a historic climate that no longer exists."[20]

5. Fish and Aquatic Species

The EIS should consider potential impacts to fish and aquatic species in the East Boulder River watershed. The East Boulder River is a second order tributary to the Boulder River. The stream is approximately 22.7 miles long and has been characterized as a high-quality, cold water river that supports several self-sustaining populations of trout, including nonnative rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*), as well as native Yellowstone Cutthroat Trout, nongame fish species, and macroinvertebrates (FWP 2020b; DSL et al. 1992). Other species known to occur in the analysis area include mottled sculpin (*Cottus bairdi*) and mountain white fish (*Prosopium williamsoni*) (FWP 2020c; GEI 2015). Yellowstone Cutthroat Trout are on the U.S. Forest Service's Northern Region Sensitive Species list.

The EIS should consider the potential direct, indirect and cumulative effects of sediment delivery, turbidity, dissolved oxygen, conductivity, water quality, changes to floodplain form and function, loss of habitat, changes in stream temperature, alterations in streamflows, impacts to

[20] R. David Williams, Bureau of Land. Mgmt. *Climate Change—Extreme Conditions: Do Plans of Operations Need to Include an Ark?* (2012), https://www.mtech.edu/mwtp/presentations/2012_presentations/Dave%20Williams.pdf.

the hyporheic zone on aquatic resources, including but not limited, to Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*), western toad (*Anaxyrus boreas*), and western glacier stonefly (*Zapada glacier*). The analysis should analyze the potential direct, indirect, and cumulative effect of nitrates on algal levels.

6. Wildlife

The EIS should consider the direct, indirect, and cumulative effects to wildlife, including federally listed and proposed species, sensitive species, management indicator species, Montana species of concern and migratory birds. The EIS should analyze the direct, indirect, and cumulative impacts to wildlife, including but not limited to:

- Direct wildlife mortality (vehicle collisions, depredation actions, etc.).
- Impacts on wildlife habitat, movement corridors, habitat fragmentation, alteration of wildlife habitat conditions (e.g., displacement, disturbance, distribution patterns, seasonal migration patterns, community composition, diversity, etc.).
- Fugitive emissions, noise, light, and use of explosives.
- Changes in habitat connectivity and gene flow.
- Introduction of exotic or invasive wildlife species.
- Impacts from road traffic with large trucks and mining equipment.

7. Wilderness

The EIS should analyze the potential direct, indirect, and cumulative effects on wilderness characteristics, including the potential impacts from noise, light, visual, access, solitude, and other potential impacts of the proposed activities.

8. Roadless Areas

The EIS should examine potential impacts to inventoried roadless areas ("IRA"). According to the scoping notice, approximately 35 acres of proposed facility development, mainly in the northern extent of the mill site project area, would be within the North Absaroka inventoried roadless area.

Roadless areas worldwide are important as refugia for biodiversity, as areas of high ecological integrity, and as bulwarks against the direct effects of roads and motor vehicles—such as habitat loss, noise disturbance, and roadkill—and indirect effects—such as habitat fragmentation, invasive species, and resource extraction. Roadless areas are especially valuable in supporting populations of animal species that require large areas free of human disturbance.[21]

[21]Matthew S. Dietz, *et al.*, *The Importance of U.S. National Forest Roadless Areas for Vulnerable Wildlife Species*, GLOBAL ECOLOGY AND CONSERVATION 2 (2021), https://reader.elsevier.com/reader/sd/pii/S2351989421004935?token=A54D0309553AA986C12FC49981C2314D2EA56423964B6805A4BE81468DE28D6B193C29DB3257EE6CB11C88706A57BB2E&originRegion=us-east-1&originCreation=20220715190201.

A recently published scientific study, *Conservation Value of National Forest Roadless Areas*, provides important and highly relevant insights into the importance of roadless areas that are adjacent to protected national parks and Wilderness areas.[22] Among other things, the study found that roadless areas adjacent to the Frank Church River of No Return Wilderness increased the effective size of the protected core area by 38 percent. The study concluded that "IRAs reduce the isolation of—and provide buffers for—national parks, wilderness areas, and other existing protected areas."[23] Furthermore, "[t]he role IRAs play in buffering protected areas from development may be even more critical in the future as developed areas continue to expand." [24]

The study found that IRAs are also important in the effort to combat climate change. Across the contiguous US, the existing protected area system captures 199,978,833 megagrams of carbon per year, and IRAs add 29% more total net primary productivity ("NPP") to that captured by the existing system. Within the West, Interior West, and East regions, IRAs contribute 34.0, 63.6, and 3.7% additional NPP to the existing protected areas, despite increasing the area protected by only 19.2, 46.9, and 3.1%, respectively. In the West, IRAs capture 13,989,603 megagrams of carbon per year.

The EIS should examine all potential impacts to inventoried roadless areas from the proposed East Boulder Amendment.

9. Air Quality

The EIS should analyze the potential direct, indirect, and cumulative effects of emissions, fugitive dust, and other mine releases on air quality.

10. Recreational Access

USFS Road 205, which runs through the Lewis Gulch TSF area, is already difficult to access due to the deterioration of road conditions. The EIS should analyze the potential impacts of proposed activities to public access of USFS Road 205.

11. Soils and Vegetation

The EIS should evaluate the potential for the development and spread of nonnative plants throughout the mine area and onto neighboring lands. The EIS should also consider the impacts of erosion, sedimentation and run off from project roads.

[22] McKinley J. Talty, *et al.*, *Conservation value of national forest roadless areas*, 2 CONSERVATION SCIENCE AND PRACTICE 11 (Sept. 23, 2020), https://doi.org/10.1111/csp2.288.
[23] Id.
[24] Id.

IV. THE EIS SHOULD ANALYZE THE PROPOSED AMENDMENT'S COMPLIANCE WITH APPLICABLE LAWS AND FOREST PLAN REQUIREMENTS

The EIS should analyze the proposed amendment's compliance with the Land Management Plan for the Custer Gallatin National Forest ("Forest Plan"), the Clean Water Act ("CWA") and Montana Water Quality Act, and the MMRA. NEPA's implementing regulations require that an EIS must discuss "[p]ossible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned." 40 C.F.R. § 1502.16(a)(5); see also 40 C.F.R. § 1506.2 ("[E]nvironmental impact statements shall discuss any inconsistency of a proposed action with any approved State, Tribal, or local plan or law (whether or not federally sanctioned).").

A. Consistency with the Forest Plan

The Custer Gallatin National Forest has recently completed a new Forest Plan (January 2022) to set the overall context for informed decision making for the next 15 years. The EIS should provide a detailed analysis that compares the proposed mine plan with the provisions of the Forest Plan, and outlines where the proposed plan is inconsistent with the 2022 Forest Plan.

B. Clean Water Act/Water Quality Act Compliance

1. 303(d) list

DEQ has been conducting successive reviews, under CWA section 303(d), of the 528-square mile Boulder River watershed, which includes the East Boulder River and the East Boulder Mine site. A total maximum daily load ("TMDL") for the Boulder River watershed was completed and published by DEQ in 2009 (DEQ, 2009). The EIS should identify the stream reaches included on the 303(d) list, the pollutants of concern, impaired beneficial uses, and how the discharges from the mine fit into the TMDL for the Boulder River.

2. Stormwater Management

According to the 2020 Water Management Plan, the Lewis Gulch TSF and Dry Fork WRSA will add two new outfalls to the stormwater MPDES permit. The direct, indirect, and cumulative potential effects of these new outfalls should be considered. The EIS should include a new stormwater plan to describe the proposed management, mitigation, and monitoring of these outfalls.

3. Discharges

According to the 2020 Water Management Plan, a revision of the MPDES permit for discharges of excess adit water was issued in 2015 and scheduled to expire October 31, 2020. The interim limits in that permit have been administratively extended until October 2023. The EIS should evaluate the environmental impacts of continuing interim limits, and the feasibility and mitigation potential of adopting any more protective limits.

C. Metal Mine Reclamation Act Compliance

Montana's Metal Mine Reclamation Act ("MMRA") requires SMC to "ensure" that its proposed "impounding structures" are "safe and stable." MCA § 82-4-335(5)(*l*). Absent such assurance, DEQ cannot permit the facility. Id. § 82-4-337(1)(h)(v) (providing that DEQ may not issue permit until it determines that "the application and the final permit meet the substantive requirement of" the MMRA). Consistent with this requirement, the EIS must take a hard look at the design for the proposed Lewis Gulch TSF to determine whether SMC has adequately "ensure[d]" the short- and long-term stability of the facility. Id. § 82-4-335(5)(*l*). In doing so, the EIS must consider and address the expert concerns detailed in the Chambers, Emerman, and Maest comments. See Exhibit 1 at 2-4; Exhibit 2 at 1-34; Exhibit 3 at 1-11.

V. RECLAMATION

The EIS must evaluate whether the proposed reclamation plan is sufficient to protect water resources and comply with state and federal reclamation requirements. The MMRA requires an applicant for a mine operating permit modification, amendment, or revision to submit a reclamation plan for DEQ approval "provid[ing] sufficient measures to ensure public safety and to prevent the pollution of air or water and the degradation of adjacent lands." MCA § 82-4-336(10). Among other requirements, the plan must provide for post-mining restoration of disturbed areas. Id. § 82-4-336(1). U.S. Forest Service regulations similarly require a mine operator to assume responsibility for reclamation activities, 36 C.F.R. § 228.8(g), including posting a bond when required, id. § 228.13.

A. Financial Assurance Calculations

There is an extensive history of inadequate financial assurance at hardrock mines in Montana, resulting in long-term water quality problems and inadequate reclamation.[25] The EIS should include an estimate of the financial assurance calculation, including detailed, site-specific cost estimates for all potential reclamation, closure, and post-closure costs. See MCA § 82-4-338 (requiring mine permit applicant to file a bond sufficient to cover all "potential cost[s] of department management, operation, and maintenance of the site upon temporary or permanent operator insolvency or abandonment," including reclamation); 36 C.F.R. § 228.13 (federal bonding requirements). Without this information, the public cannot determine whether there will be adequate funding for reclamation, mitigation measures, long-term water treatment, tailings management, or other post-closure activities.

The EPA has repeatedly urged state and federal agencies to include financial assurance estimates in the NEPA process to ensure that the public has an opportunity to comment on the adequacy of these estimates:

> EPA believes that financial assurance is an important element of the proposed action and must be disclosed in the EIS. FA is an important component of the mitigation plan, and disclosing information on the costs and form of FA is essential for the public to understand and comment on the adequacy of mitigation, risks to the environment, and

[25] Zanolli, supra note 11.

financial risks to the public. EPA believe it is not possible to fully evaluate anticipated effectiveness of the mine and reclamation plan and associated risks to the environment without this type of information.[26]

The EIS must include a detailed financial assurance calculation, including cost estimates for all reclamation, closure, and post-closure costs.

B. Temporary or premature closures

The EIS should evaluate potential environment impacts associated with temporary closures or early closure of mine activities due to depressed metal prices or other causes.

VI. CONCLUSION

In sum, Earthworks, Greater Yellowstone Coalition, and Montana Trout Unlimited urge CGNF and DEQ to provide a meaningful evaluation of a filtered/dry tailings facility alternative to the proposed Lewis Gulch TSF, conduct substantial additional data collection to adequately characterize the environmental baseline, take a hard look at a broad range of potential environmental impacts, ensure compliance with all applicable laws and forest plan requirements, and conduct an in-depth evaluation of the proposed Lewis Gulch closure plan. NEPA and MEPA require that CGNF and DEQ take every possible measure to protect public safety, and the East Boulder and Yellowstone rivers from the threat of mine pollution.

Please do not hesitate to contact us if you have any questions.

/s/ Benjamin J. Scrimshaw
Benjamin J. Scrimshaw
Earthjustice
313 East Main Street
P.O. Box 4743
Bozeman, MT 59772-4743
bscrimshaw@earthjustice.org

Bonnie Gestring
Earthworks
Missoula, MT 59801
bgestring@earthworksaction.org

Joe Josephson
Greater Yellowstone Coalition
215 South Wallace Avenue, Bozeman, MT 59715
gyc@greateryellowstone.org

[26] Letter from Lynne McWhorter, Environmental Review and Sediment Management Unit, EPA, to Dave Rosenkrance, Challis BLM (Sept. 27, 2010).

David Brooks
Montana Trout Unlimited
P.O. Box 7186, Missoula, MT 59807
david@montanatu.org