



Consultants in Natural Resources and the Environment

Aquatics Biological Evaluation Stillwater Mining Company's East Boulder Mine Stage 6 Tailings Storage Facility Expansion Project

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Introduction

This specialist report and biological evaluation identifies and summarizes relevant issues for aquatic habitat and biota, applicable laws, regulations, policies, and agencies/persons consulted in preparing this report. It discloses the environmental consequences of No Action Alternative and the Proposed Action (East Boulder Mine Stage 6 Tailings Storage Facility Expansion Project (Project)) in terms of context and intensity using the 10 significance factors identified in 40 Code of Federal Regulations (CFR) 1508.27(b), and concludes whether the No Action Alternative and Proposed Action comply with laws, regulations, and policies.

Issue Statements

Effects of sediment delivery, water quality, and possible changes to floodplain form and function on aquatic resources, including Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*), western toad (*Anaxyrus boreas*), and western glacier stonefly (*Zapada glacier*), were identified as potential issues from internal and external scoping. These issues are further defined and described for this analysis using the following issue indicators:

Issue Indicator #1 – Sediment effects on aquatic habitat and biota: Raising the elevation of the Tailings Storage Facility (TSF) embankment and relocating or expanding several of the mine site's components (water recycle pond, system pipes, underdrain collection system, access road, and soil stockpile) can disturb soils and vegetation, thus increasing the potential for erosion and sediment transport to streams. This issue indicator is discussed in qualitative terms of the potential for increased fine sediment in streams to reduce habitat quality and cause adverse effects on fish and other aquatic biota.

Issue Indicator #2 – Pollutant (nitrates) effects on aquatic habitat and biota: TSF embankment construction from run-of-mine rockfill has been a source of aqueous nitrate. This issue indicator is discussed in qualitative terms of the potential for seepage of nitrates to contaminate waters or wetlands and affect aquatic biota.

Issue Indicator #3 – Physical disturbance and modification to aquatic habitats: Disturbance and/or modification to aquatic habitats is discussed in qualitative terms of the potential for modifications to stream form and function.

Issues Dismissed

The U.S. Forest Service's (Forest Service) Northern Region Sensitive Species list includes three aquatic species known to occur on the east side of the Gallatin National Forest, including the Yellowstone cutthroat trout (YCT), western toad (WT), and northern leopard frog (*Rana pipiens*) (Forest Service 2011a, 2011b). This analysis only considers effects on those sensitive aquatic species likely to occur within the Project area based on suitable habitat and existing distribution data. Occurrence of the northern leopard frog is possible, but not probable, because the only observations have been at lower elevations (Montana Fish, Wildlife and Parks [FWP] 2020a). Therefore, no impacts on individual northern leopard frogs or their habitat are expected. The WT is the only Region 1 Forest Service listed sensitive amphibian species that may occur and has suitable habitat within the Project area; and the only sensitive fish species occurring within the Project area is the YCT (FWP 2020b, 2020c). Therefore, this analysis only further evaluates effects on YCT and WT.

There is currently one federally listed threatened aquatic species (western glacier stonefly) with the potential to occur within the Project area; however, there is no suitable habitat within the Project area. This species requires high-elevation, fishless, alpine streams linked to glacial meltwater sources. Some small glaciers are several miles from the Project area on the east side of Iron Mountain and on Chrome Mountain, but no alpine streams flow from these glaciers. The East Boulder River contains fish. Because the type of aquatic habitat required for this species is not present within the Project area and there are no known occurrences of this species in the Project area, this analysis does not further consider effects on this species. There are currently no other federally listed threatened or endangered aquatic species (including amphibians), designated critical habitat, or proposed critical habitat occurring within the Project area, which is defined below.

Project Description

Stillwater Mining Company (SMC) applied for Amendment 003 (amendment) to Operating Permit Number 00149 issued by the Montana Department of Environmental Quality (DEQ) and a revision to the Plan of Operations approved by the Forest Service Custer Gallatin National Forest (CGNF). The proposed amendment and plan revision for the East Boulder Mine (Proposed Action or Project) would authorize SMC to expand the TSF to Stage 6, which would raise the TSF an additional 14 feet in elevation with ancillary relocation of specific mine infrastructure. The Project would not result in a change to the 396.99-acre permit area (Project area). The East Boulder Mine is located in Sweet Grass County, Montana, approximately 23 miles south of the town of Big Timber (Figure 1).

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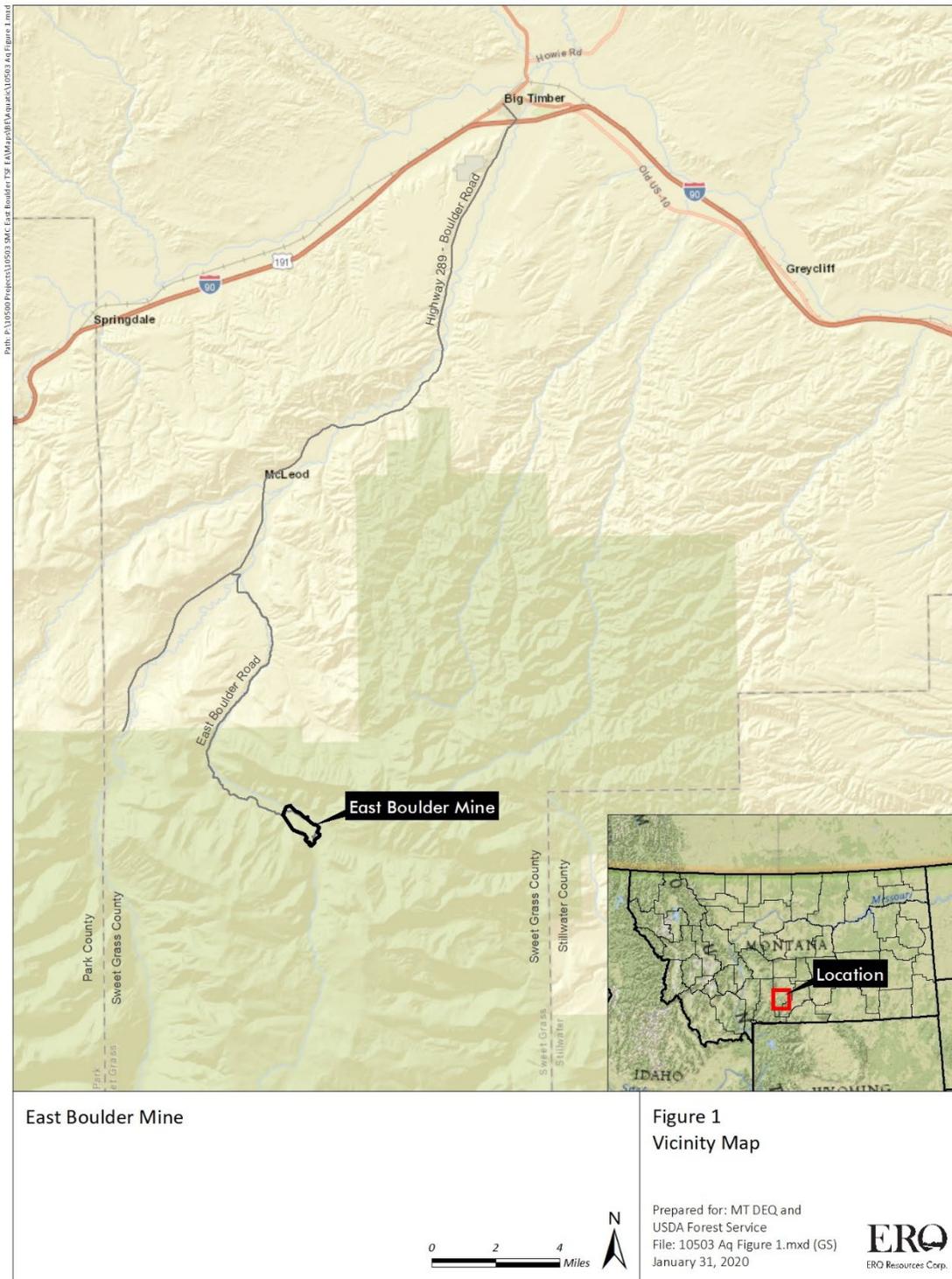


Figure 1. Vicinity Map

Currently, the East Boulder Mine comprises an underground platinum and palladium mine, access tunnels, plant site facilities, a lined TSF, and other ancillary facilities to support the operation. Waste rock from the underground mine is fully used in ongoing construction for the TSF embankments. Reclamation is conducted according to SMC's Consolidated Operations and Reclamation Plan (CORP [SMC 2016]) and, to the extent practicable, is completed concurrent with mining operations to control erosion and the spread of noxious weeds. Concurrent reclamation has occurred since the start of operations in 2002, with a focus on the powerline corridor, soil stockpiles, cut and fill slopes, borrow areas, percolation pond slopes, and TSF embankment slopes. The current reclamation status within the permit boundary is provided in the Operating Permit Annual Reports. Mine operation through 2017 included reclamation on 39.36 acres.

Under the No Action Alternative, DEQ and CGNF would not approve SMC's application for implementation of the Project. The No Action Alternative effectively represents current conditions and the full construction of TSF embankment Stages 4 and 5, which were permitted and analyzed in the 1992 East Boulder Mine Project Final Environmental Impact Statement (FEIS) (1992 FEIS; DSL et al. 1992). Impacts of the No Action Alternative are not expected to vary beyond those considered in the 1992 FEIS and 2012 SMC's Revised Water Management Plans and Boe Ranch LAD) FEIS (DSL et al. 1992; DEQ and Forest Service 2012a).

Under the Proposed Action Alternative, DEQ would approve Amendment 003 and CGNF would approve the revised Plan of Operations to authorize construction of the Stage 6 TSF expansion. The proposed amendment and the plan of operations revision would expand the existing 243.88-acre disturbance area to 286.85 acres and would authorize SMC to expand the TSF to Stage 6, raising the height of the impoundment 14 feet above the previously approved Stage 5 elevation of 6,344 feet, with a maximum embankment height of 156 feet. This would allow for extension of mining activities and operation of the TSF between 2027 and 2033 at current production rates.

All Project activities would occur within the existing 396.99-acre permit boundary and would disturb 56.74 acres within the proposed 286.85-acre disturbance boundary (Figure 2); in terms of the existing 243.88-acre bonded disturbance area, 41.13 acres within and 15.61 acres outside the existing 243.88-acre bonded disturbance area would be disturbed. The 41.13 acres in the previously permitted area were evaluated in the 1992 FEIS and 2012 FEIS. Project disturbances would result from improving the Lewis Gulch Road; relocating the East Boulder Road and associated infrastructure; constructing a borrow area, stockpile area, and stormwater diversions; and constructing the TSF Stage 6 embankment (Table 1).

Table 1. Proposed Project Disturbance.

Project Activities	Existing 243.88-acre Bonded and Permitted Disturbance Area		Proposed 286.85-acre Disturbance Area
	Project Disturbance Within Permitted and Bonded Disturbance Area (acres)	Project Disturbance Outside Permitted and Bonded Disturbance Area (acres)	Project Disturbance within Expanded Disturbance Area (acres)
Lewis Gulch Road Improvements	3.26	2.62	5.88
East Boulder Road and Associated Infrastructure Relocations (Guard House, wildlife exclusion fence, etc.)	5.50	0.72	6.22
Storm Water Runoff Diversion	0.33	1.03	1.36
Soil Stockpile Area “E”	0.00	8.05	8.05
Stage 6 Borrow Area	9.25	3.19	12.44
Stage 6 Embankment	22.79	0.00	22.79
Total	41.13	15.61	56.74

Source: Knight Piésold Ltd. 2020, Appendix A, Drawing No. 0010

Note: acreages are approximate due to rounding errors.

Additional information on the Project can be found in the Environmental Assessment (EA) prepared jointly by the Forest Service and DEQ.

Regulatory Framework

The Forest Service is obligated under certain federal and state laws and regulations to evaluate and take action regarding the Proposed Action. Although not an exhaustive list, the laws, regulations, and executive orders (EOs) summarized below are key to the Project; compliance with these laws and regulations is demonstrated in the Conclusion section.

Land and Resource Management Plans

Gallatin Forest Plan

The Land and Resource Management Plan for the Gallatin National Forest (Gallatin Forest Plan; Forest Service 1987, amended in 2015) represents the land and resource management plan required by the National Forest Management Act of 1976. The Gallatin Forest Plan’s forestwide goals and objectives include “Provide for orderly and environmentally acceptable exploration and development of minerals, oil and gas, and geothermal resources” and “Existing and future rights to prospect, develop, and mine on National Forest lands open to mineral entry would be recognized in implementation of this Forest Plan. Management Area and Forest-wide standards would be considered in the development of the Plan of Operations...” (Forest Service 2015). In addition, the Gallatin Forest Plan includes direction specific to each management area; Management Area 8, which includes the Project area, and includes the following applicable standards.

Wildlife and Fish—Provide for fish and wildlife habitat improvement when consistent with management area goals. Project plans would incorporate considerations for fish and wildlife.

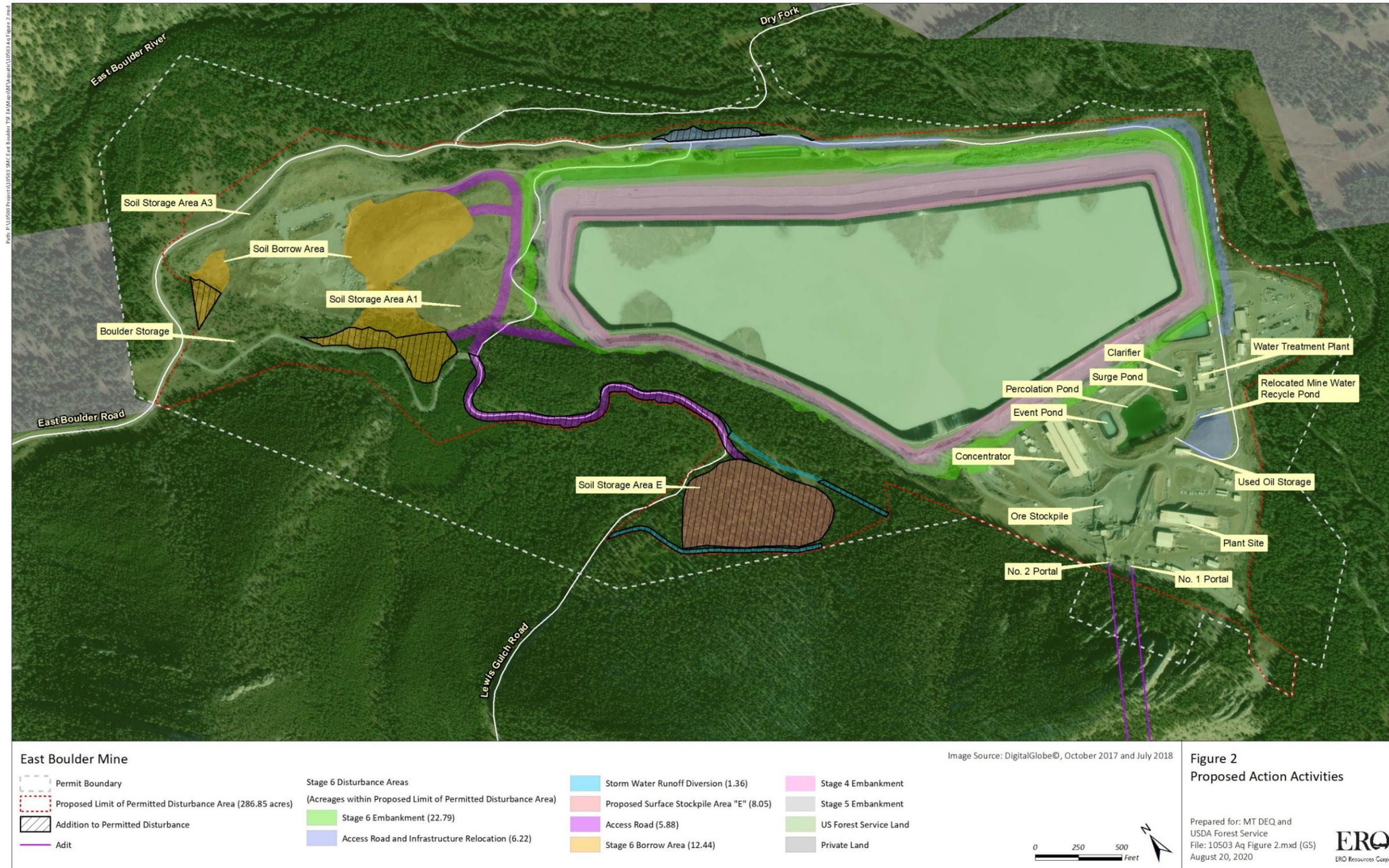


Figure 2. Proposed Action

Gallatin National Forest (GNF) Travel Management Plan Direction

The GNF Travel Management Plan incorporates the following standards (GNF 2006).

Standard E-4: Water, Fisheries, and Aquatic Life. In watersheds with streams currently at or above fish habitat management objectives, proposals for road and trail construction, reconstruction, and maintenance would be designed to not exceed annual sediment delivery levels in excess of those in Table 2.

Sixth-code Hydrologic Unit Codes (HUCs) are the typical analysis unit for sediment delivery (and other habitat parameters), except where a sixth code HUC artificially bisects a watershed and is therefore inadequate for analysis of impacts on aquatic habitat and aquatic organism metapopulations. In such cases, appropriate larger units would be analyzed (e.g., 5th code HUCs).

Sediment delivery values in Table 2 generally serve as guidelines with the analysis unit; however, sediment delivery values denoted in individual 7th code HUCs may temporarily exceed sediment delivery rates denoted in Table 2 in the following circumstances:

1. The HUC does not contain a fragmented sensitive or Management Indicator Species (MIS) fish population;
2. The majority of HUCs in the analysis unit remain within sediment delivery values listed in Table 2;
3. Other core stream habitat (e.g., pool frequency and pool quality) or biotic (e.g., macroinvertebrates and fish populations) parameters within the HUC do not indicate impairment as defined by DEQ; and
4. Sediment delivery levels would return to values listed in Table 2 within 5 years of Project completion.

Table 2. Substrate sediment and sediment delivery by Forest Service stream category.

Category	Management Objective (% of reference*)	% Fine Substrate Sediment (<6.3 millimeters [mm])	Annual % > Reference** Sediment Delivery
A Sensitive Species and/or Blue Ribbon fisheries	90	0 – 26	30
B All other streams (formerly Classes B, C, and D)	75	0 – 30	50

*% of reference = % similarity to mean reference condition; reference conditions range

**Reference = observed relationship between substrate % fines and modeled sediment delivery in reference (fully functioning) GNF watersheds

Class A streams are those streams supporting a sensitive fish species or providing spawning or rearing habitat to the Gallatin, Madison, and Yellowstone Rivers, or Hebgen Lake. Class A streams are to be managed at a level that provides at least 90 percent of their inherent fish habitat capability. The East Boulder River and its fish-bearing tributaries supporting YCT are Class A streams; however, a numeric sediment management objective for Standard E-4 is not suggested, and potential sediment effects will be discussed qualitatively.

Standard E-5: Water, Fisheries, and Aquatic Life. Proposed roads and trails shall not be located in the floodplains or rivers and streams or in wetlands except where necessary to cross a stream or wetland with appropriate permits.

Standard E-6: Water, Fisheries, and Aquatic Life. Stream crossing facilities for proposed roads and trails shall allow for passage of aquatic organisms by avoiding stream channel constriction or alteration of the flow pattern, except where passage restriction is desired to isolate genetically pure cutthroat trout populations from exposure to hybridization or competition by nonnative salmonids.

Standard E-7: Water, Fisheries, and Aquatic Life. Road materials should not be side cast into streams or wetlands.

Other Laws, Regulations, and Policies

Clean Water Act and Montana Water Quality Act

Additional protections for fisheries are provided under the federal Clean Water Act, Montana Water Quality Law, Montana Streamside Management Zone Law, Montana Stream Protection Act, and state and federal Best Management Practices (BMPs).

Presidential EO 12962

EO 12962 mandates disclosure of effects on recreational fishing as part of a nationwide effort to conserve, restore, and enhance aquatic systems and provide for increased recreational fishing opportunities. EO 12962 provides guidance on recreational fishing opportunities by stating:

Federal Agencies shall, to the extent permitted by law and where practicable, and in cooperation with States and Tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by:

b. identifying recreational fishing opportunities that are limited by water quality and habitat degradation and promoting restoration to support viable, healthy, and where feasible, self-sustaining recreational fisheries....

h. evaluating the effects of Federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries and document those effects relative to the purpose of this order.

Presidential EOs 11990 and 11988

EO 11990 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse effects associated with the destruction or modification of wetlands. Federal agencies must find that there is no practicable alternative to new construction located in wetlands, and that the Proposed Action includes all practicable measures to minimize harm to wetlands. Agencies may take into account economic, environmental, and other pertinent factors in making this finding. As required by EO 11990,

project activities are to avoid, if possible and practicable, adverse impacts on wetlands and to preserve and enhance the natural and beneficial values of wetlands.

As required by EO 11988, project activities are to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development.

Forest Service Wetlands Policy (Forest Service Manual [FSM] 2500)

As required by Forest Service Wetlands Policy, management needs to ensure the protection of wetlands and floodplains among other requirements.

Endangered Species Act

The Endangered Species Act (ESA; 16 United States Code [USC] § 1531 *et seq.*) protects threatened and endangered species and their designated critical habitat. Section 7(a)(4) of the ESA requires federal agencies to confer with the U.S. Fish and Wildlife Service (FWS) on any agency action that is likely to jeopardize the continued existence of any species proposed for listing or result in the adverse modification of critical habitat proposed to be designated. See additional discussion below under **Existing Condition, Listed Threatened or Endangered Species.**

National Forest Management Act and Forest Service Sensitive Species Policy (FSM 2670.5)

Sensitive species are managed under the authority of the National Forest Management Act (NFMA) and are administratively designated by the Regional Forester. FSM 2670.22 requires the maintenance of viable populations of native and desired nonnative species and to avoid actions that may cause a species to become threatened or endangered. The NFMA directs the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives” [16 USC 1604(g)(3)(B)]. Providing ecological conditions to support diversity of native plant and animal species in the planning area satisfies the statutory requirements. The Forest Service’s focus for meeting NFMA requirements and implementing regulations is on assessing habitat to provide for a diversity of species.

The YCT is the only sensitive fish species occurring in the analysis area; and one sensitive amphibian, the WT, has potential to occur in the analysis area (see the Analysis Area section below). This report constitutes the biological evaluation for YCT and WT (see the Sensitive Species section below).

Cooperative Conservation Agreement for Yellowstone Cutthroat Trout in Montana

In 1998, the GNF joined numerous other agencies and the Crow Tribe in forming the Cooperative Conservation Agreement for YCT within the State of Montana (FWP 2007). Agencies affiliated with this effort include Montana Department of Fish, Wildlife, and Parks; DEQ; Forest Service, Northern Region; CGNF; Bureau of Land Management; FWS; Bureau of Reclamation; Bureau of Indian Affairs; and the Crow Tribe. This agreement established a framework of cooperation between the participating parties to work together for the conservation of YCT. The primary goal of the agreement and accompanying YCT conservation program is to ensure the persistence of the YCT subspecies within the historic range in

Montana at levels and under conditions that provide protection and maintenance of both the intrinsic and recreational values associated with the subspecies. A commitment identified in the agreement that is most relevant to the Project is “modify land uses to provide the greatest degree of habitat and population protection.”

Environmental Consequences

Analysis Framework

The following analysis describes anticipated direct, indirect, and cumulative effects on aquatic species and habitats (including Forest Service sensitive species) for the Proposed Action. The analysis characterizes the direction of effect, the magnitude or intensity of the anticipated effect, and the duration of the effect. The effects discussed below assume the proposed activities are implemented according to SMC's Operating Permit 00149 and its Plan of Operations with associated Environmental Protection Measures.

Analysis Area

The spatial bounds for evaluating direct, indirect, and cumulative effects on aquatic resources includes reaches of tributary streams and wetlands within the Project area at or immediately downstream of the Proposed Action (analysis area). Several named drainages are tributary to the East Boulder River adjacent or upstream of the Project area including Brownlee Creek, Burnt Gulch, Canyon Creek, Dry Fork Creek, Forge Creek, and Lewis Gulch (Figure 3).

Construction of the Project would occur concurrently with mining activities occurring over approximately seven years, beginning in 2020. Expansion of the TSF would allow the mine to remain active for approximately eight years beyond the current plan of operations, from the end of 2027 through 2033 at current production rates (Knight Piésold Ltd. 2020). Reclamation of all disturbed areas are anticipated to be completed within approximately eight years after completion of operations. Therefore, the surface disturbance and human activities associated with the Proposed Action would span approximately 21 years before reclamation would be completed. Effects on aquatic resources are not expected to persist beyond final reclamation and bond release.

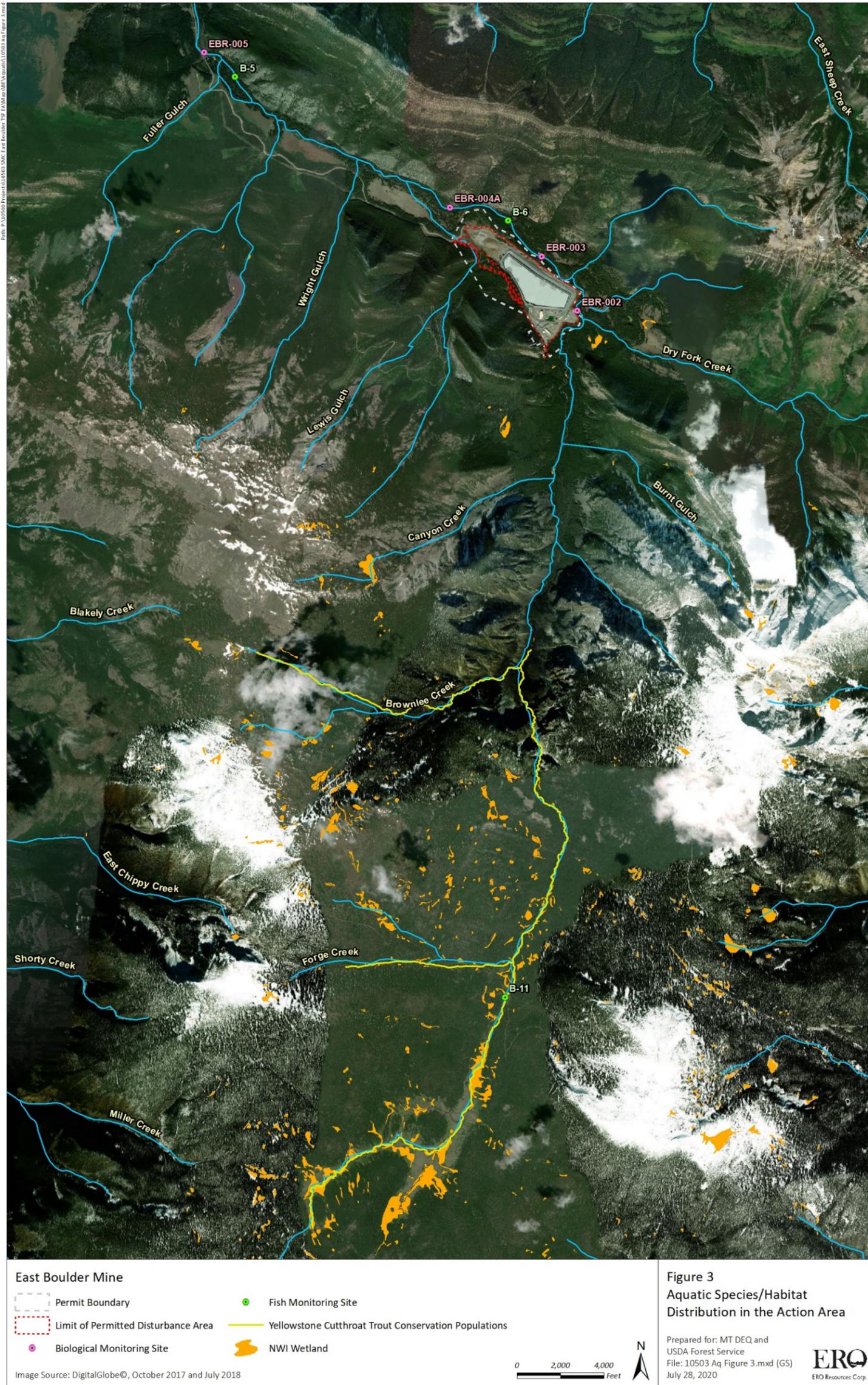


Figure 3. Aquatic Species/Habitat Distribution in the Action Area

Methods and Data Sources

Water Quality

Water quantity conditions and anticipated changes in water quality resulting from the Proposed Action were derived from seepage and stability analysis detailed by Knight Piésold Ltd. (2020); Water Resources Monitoring Reports (SMC and Hydrometrics 2018); East Boulder River Biological Monitoring Reports (Rhithron 2018); and East Boulder River Sediment, Turbidity, and Discharge Monitoring Report (Story and Hancock 2011).

Distribution and Abundance of Aquatic Biota

Existing fish species distribution information within the Project area was reviewed from publicly available FWP geospatial data (FWP 2020d). Additional fisheries information was derived from the Montana Fisheries Information System (FWP 2020e), the Yellowstone Cutthroat Trout Conservation Strategy for Montana (FWP et al. 2013), and the Yellowstone Cutthroat Assessment interactive mapping tool (FWP 2020f). Additionally, as part of the Good Neighbor agreement, a fish population survey was conducted for SMC by GEI Consultants (GEI) in 2014 in East Boulder River that included data from 2001, 2003, and 2009 sampling efforts (GEI 2015).

Amphibian species presence and/or habitat availability within the Project area was evaluated by reviewing geospatial observations within the Montana Natural Heritage Map Viewer Application and using Montana Natural Heritage Wetland Data (Montana Natural Heritage Program (MNHP) 2020a, 2020b).

Habitat Characterization

A qualitative assessment of aquatic habitat conditions was completed using information included in previous reports such as the East Boulder Mine Project FEIS (DSL et al. 1992) and the Revised Water Management Plan and Boe Ranch LAD FEIS (DEQ and Forest Service 2012). Relevant site information used from these reports includes stream gradient, substrate type, channel width and pool depth, and the location of fish barriers. MNHP wetland geospatial data were queried in Arcmap™ to determine wetland types in the Project area (MNHP 2020b).

Existing Condition

Affected Environment

The Project area is located in the East Boulder River drainage (Figure 2). The East Boulder River is a second order tributary to the Boulder River. The drainage ranges in elevation from more than 10,000 feet at the headwaters in Placer Basin down to 4,840 feet at its confluence with 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 YCT, 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 2020d; GEI 2015).

A variety of instream habitat is supported in the East Boulder River, including riffles, runs, and pools. The section of the East Boulder River running adjacent to the East Boulder Mine is boulder strewn with pocket water, which functions as holding habitat for many fish species (DSL et al. 1992; DEQ and Forest Service 2012). Several named drainages are tributary to the East Boulder River adjacent or upstream of the Project area including Brownlee Creek, Burnt Gulch, Canyon Creek, Dry Fork Creek, Forge Creek, and Lewis Gulch (Figure 3).

Project area stream reaches were characterized from existing data included in the 1992 FEIS, the 2012 SMC's Revised Water Management Plans and Boe Ranch LAD FEIS, and GEI's Fisheries Monitoring Report (DSL et al. 1992; DEQ and Forest Service 2012; GEI 2015). Stream reach characterization was done using Level I and a cursory Level II classification scheme outlined by Rosgen (1996). Fish-bearing streams within the Project area primarily consist of moderate gradient B type channels. Rosgen B3 channel types are likely the most common found in reaches of the East Boulder River near the Project area. B3 channels have boulder- and cobble-dominated substrates and lesser amounts of gravel. They have moderately steep gradients approaching 5 percent and are moderately entrenched and confined. They typically have moderate energy and low sediment supply with correspondingly low bedload transport rates. The channel bed and banks are considered stable and contribute only small quantities of sediment during runoff events. These streams are subject to high spring runoff events with comparatively low late summer flows. Channel sensitivity to increased streamflow, streambank erosion potential, and sediment discharge is low for B3 channels. Riparian vegetation has negligible controlling influence on streambank stability. Large woody debris is an important component for fisheries habitat in B3 channels when available (Rosgen 1996).

Wetlands within the analysis area are characterized as freshwater emergent, freshwater pond, riparian forested, and riverine (MNHP 2020b). Columbia spotted frogs (*Rana luteiventris*) and boreal chorus frogs (*Pseudacris maculata*) were the only amphibian species with observations reported within the Upper East Boulder River watershed, which includes just downstream of the Project area and tributary streams (MNHP 2020a). The MNHP map viewer data (MNHP 2020a) lists 31 Columbia spotted frog point observations from 2005 to 2013 and one boreal chorus frog observation in 2019 in the Upper East Boulder River watershed drainage; no other species observations were reported.

Long-term biological monitoring of macroinvertebrates, periphyton, and Chlorophyll *a* have shown inconsistent results, indicating both unimpaired and moderate impairment conditions in the East Boulder River (Rhithron 2018). Macroinvertebrates assemblages in 2018 indicate improved biological integrity since 2015 (the last sampling effort) and potential mild stress from nutrient enrichment. The invertebrate assemblage data suggest stream habitats are intact and there is little to no evidence of metals contamination (Rhithron 2018). Diatoms suggested low probability of impairment related to sediment deposition or nutrient enrichment, and chlorophyll *a* concentrations were below the

suggested nuisance level standard (125 milligrams (mg) per square meter), excluding outliers, but were higher than in previous years (Rhithron 2018).

Long-term sediment monitoring conducted in coordination with the GNF and SMC in the East Boulder River stream system documents “a system that is very low in suspended sediment, bedload, and turbidity” (Story and Hancock 2011). The report describes a system with very limited supply of sediment due to coarse-textured substrates. Sediment monitoring found no measured changes in sediment or turbidity due to the mine exploration or road construction activities, and the concern for sediment discharge was so low that unless there were new potential sources, the interval for monitoring was recommended to be extended.

Water resources monitoring at the East Boulder Mine was first initiated in the 1980s to document baseline conditions and currently continues under the most recent revision of the Water Resources Monitoring Plan (SMC and Hydrometrics 2016). Water resources monitoring is conducted to document the quality and quantity of water resources in the vicinity of the mine including the monitoring of adit and tailings water. Drilling investigation and ground water studies have identified explosives residue washed from waste rock used for construction of the TSF embankments as the source of elevated nitrate concentrations in downgradient ground water. SMC implemented various mitigations to reduce nitrogen sources, limit leaching of nitrogen from waste rock, and collect meteoric water infiltrating through waste rock on the Stages 4 and 5 TSF embankment foundations with an embankment underdrain collection system (SMC and Hydrometrics 2018). In addition, in situ treatment wells and ground water capture wells were started in 2017 to further treat and capture nitrogen. Continued ground water monitoring indicates nitrate plus nitrite concentrations have stabilized mostly below the 7.5 mg per liter (mg/L) degradation limit outside of the mixing zone. East Boulder River surface water monitoring in the Project area indicates neutral to slightly alkaline pH with low concentrations of salts, and nitrate plus nitrite concentrations ranged from less than 0.01 mg/L to 0.50 mg/L at East Boulder River monitoring sites from 2013 to 2017 (DEQ and Forest Service 2012; SMC and Hydrometrics 2018). See the 2012 FEIS for additional information on ground and surface water conditions (DSL et al. 1992).

Listed Threatened or Endangered Species

Section 7 of the ESA (PL 93-205, as amended) directs federal agencies to ensure that actions authorized, funded, or carried out on National Forest lands are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of habitat or their critical habitat (16 USC 1536). CGNF is required to consult with FWS on Forest Service determinations of effects on federally listed/proposed species and critical habitat in accordance with the ESA, its implementation regulations (50 CFR 402.13), and FSM 2671.4.

Western Glacier Stonefly

The western glacier stonefly is the only federally listed threatened aquatic species with the potential to occur within the Project area. The western glacier stonefly (*Zapada glacier*) is an aquatic macroinvertebrate in the taxonomic order Plecoptera (stonefly) that was recently listed as federally threatened (Service 2020). Western glacier stoneflies occupy the most upstream reaches of alpine

streams, typically occurring within the first half mile of stream, starting at the meltwater source (Service 2020). They are known to occur in only 16 streams, including 6 in the Absaroka/Beartooth Wilderness, Montana; and all occupied streams are high-elevation alpine streams originating from cold water sources, including glaciers and small icefields, permanent and seasonal snowpack, alpine springs, and glacial lake outlets (Service 2020).

There is no suitable western glacier stonefly habitat within the Project area. Because the type of aquatic habitat required for this species is not present within the Project area and there are no known occurrences of this species in the Project area, this analysis does not further consider effects on this species.

Sensitive Species

The Forest Service's Northern Region (Region 1) Sensitive Species list includes three aquatic species known to occur on the east side of GNF, including the YCT, WT, and northern leopard frog (Forest Service 2011a, 2011b). This analysis only considers effects on those sensitive aquatic species likely to occur within the Project area based on suitable habitat and existing distribution data. Occurrence of the northern leopard frog is possible, but not probable, because of the high elevation of the Project area (FWP 2020a). Therefore, no impacts on individual northern leopard frogs or their habitat are expected. WT is the only Region 1 Forest Service listed sensitive amphibian species that may occur and has suitable habitat within the Project area (FWP 2020a). Table 3 lists Regional Forester sensitive aquatic species (Forest Service 2011a, 2011b) that are known or have potential to occur on the federal or nonfederal lands in the Project area.

Table 3. Regional Forester sensitive species that may occur on GNF in the Project area.

Regional Forester Sensitive Species	Habitat	Present in Project Area
Yellowstone Cutthroat Trout <i>Oncorhynchus clarki bouvieri</i>	Relatively clear, cold streams, rivers, and lakes	Yes
Western (Boreal) Toad <i>Bufo boreas</i>	Low-elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes, to high-elevation ponds, fens, and tarns at or near tree line	Potential
Northern Leopard Frog <i>Rana pipiens</i>	Low-elevation and valley bottom ponds, spillway ponds, beaver ponds, stock reservoirs, lakes, creeks, pools in intermittent streams, warm water springs, potholes, and marshes	No

Sources: USDA 2011 and FWP 2020a; FWP 2020b, 2020c

YCT are the only potentially affected sensitive fish species in the analysis area, and WT are the only potentially affected sensitive amphibian species in the analysis area. Therefore, this analysis only further evaluates effects on sensitive species YCT and WT.

Yellowstone Cutthroat Trout

YCT, a member of the family Salmonidae, were first described by C.E. Bendire in 1882 based on a sample from a population in Waha Lake, Idaho; however, many explorers had made earlier observations of this subspecies in Montana and Wyoming (Behnke 1992; May 1996, as cited in Young 2001). YCT historically occupied approximately 17,397 miles of habitat in the western U.S., including, from east to west, the upper portions of the Yellowstone River drainage within Montana and Wyoming and the Upper Snake River drainage in Idaho, Wyoming, Nevada, and Utah (Behnke 1992, as cited in May et al. 2003). In Montana, YCT were historically widely distributed throughout the Upper Yellowstone River basin and its tributary streams, ranging as far downstream as the Tongue River (FWP 2020c).

YCT inhabit relatively clear and cold stream, river, and lake environments (Young 2001). Spawning typically occurs in spring and early summer, after flows have declined from their seasonal peak, in sites with suitable substrate (gravel less than 85 mm in diameter), water depth (9 to 30 centimeters [cm]), and water velocity (16 to 60 cm/second) (Varley and Gresswell 1988; Byorth 1990; Thurrow and King 1994, as cited in Young 2001). Upon emergence, fry immediately begin feeding, typically in nearby stream margin habitats, but they may also undertake migrations to other waters (Gresswell 1995, as cited in Young 2001). Sexual maturity is generally achieved by age 3 or older. YCT and rainbow trout readily hybridize, producing fertile offspring, and sympatric populations (those living together) often form hybrid swarms (Allendorf and Leary 1988; Henderson et al. 2000, as cited in Young 2001).

YCT exhibit three primary life history patterns: resident, fluvial, and adfluvial (Gresswell 1995, as cited in FWP 2020c). Resident life forms occupy home ranges entirely within relatively short reaches of streams, fluvial fish migrate from larger streams or rivers to smaller streams to reproduce, and adfluvial life history forms exhibit a similar pattern, but migrate, sometimes many kilometers, as mature adults from lakes to inlet or outlet streams to spawn (Young 2001).

Throughout their historic range, YCT have undergone substantial declines in distribution and abundance (Young 2001). Genetically unaltered YCT occupy about 7 to 25 percent of historical habitats (May et al. 2003). Most stream populations of YCT are at risk of extinction from competition or hybridization with nonnative trout or demographic and stochastic threats (FWP 2020c). Genetically pure YCT occupy the uppermost sections of the East Boulder River upstream of a steep falls fish barrier near Placer Basin (Figure 3) (DSL et al. 1992). During fish sampling efforts conducted in 2001, 2003, 2009, and 2014, YCT were captured at site B-11, upstream of the fish barrier, during each sampling event, and no other trout were encountered at that site (Figure 3) (GEI 2015). According to Weston 1989, the YCT in this section of the East Boulder River are genetically pure and could be a genetic source for future species conservation efforts. These YCT were likely introduced through stocking events in Placer Basin on the Upper East Boulder River in 1971 (Poore 1990, as cited in DSL et al. 1992). Brook trout, Rainbow trout, brown trout, sculpin, mountain whitefish, and YCT (hybrids) are present in the downstream sections of the East Boulder River, below the fish barrier (FWP 2020d; FWP 2020e; GEI 2015). Additionally, "all sites on the East Boulder River contained healthy populations of trout in 2014. All sites contained multiple age classes... successful reproduction is taking place within the drainage" (GEI 2015).

Western Toad

The WT (*Bufo boreas*) occurs throughout most of western North America, from Alaska to New Mexico. WT is currently listed as a sensitive species by the Forest Service in Montana (Forest Service 2011b). WT uses a wide variety of habitats from sea level to 12,000 feet in elevation including low-elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes to high-elevation ponds, fens, and tarns at or near tree line (Rodgers and Jellison 1942; Brunson and Demaree 1951; Miller 1978; Marnell 1997; Werner et al. 1998; Boundy 2001, as cited in FWP 2020b).

WT breed in lakes, ponds, and slow streams, preferring shallow areas with mud bottoms, from May to July, laying long, clear double strings of eggs. Tadpoles metamorphose in 40 to 70 days. Because of their narrow environmental tolerance (10 to 25° C throughout the year), adults must use thermally buffered microhabitats during the day and can be found under logs or in rodent burrows. Adults are active at night and can be found foraging for insects in warm, low-lying areas. WT overwinter in rodent burrows and underground caverns. Sexual maturity is generally achieved by age 4 for males and at 6 years for breeding females or older (MNHP 2020b; FWP 2020b).

In Montana, WT are generally distributed throughout western portions of the state and have not been observed in the Project area (MNHP 2020b). Although WT have not been detected in the Project area, wetlands providing potential habitat for WT occur along the East Boulder River drainage and tributaries in the analysis area, which provide suitable habitat for this Forest Service Region 1 sensitive species

Management Indicator Species

MIS within the analysis area include wild trout (brook trout, brown trout, and rainbow trout). This analysis focuses on their habitat needs. In an effort to minimize repetition, only select watershed condition information is summarized as it relates directly to the local fish populations potentially affected by the Project.

Wild Trout

As described above, brook trout, rainbow trout, brown trout, and cutthroat trout hybrids are present in the downstream sections of the East Boulder River, below the fish barrier (FWP 2020d; 2020e; GEI 2015). Additionally, "all sites on the East Boulder River contained healthy populations of trout in 2014. All sites contained multiple age classes... successful reproduction is taking place within the drainage" (GEI 2015).

Design Features and Mitigations

Implementation of design features such as physical storm water controls and BMPs would minimize or eliminate the potential for effects on aquatic species. Where possible, BMPs would be installed prior to commencement of sediment-generating activities in order to contain sediment generated from work sites. Runoff from areas upslope from the Project area would be diverted around the TSF with diversion channels that have been sized for the 24-hour Probable Maximum Flood, thereby minimizing potential for upslope run-off. The TSF has been designed to contain the Inflow Design Flood resulting from the 24-

hour Probable Maximum Flood, thereby minimizing the potential for TSF failure. The East Boulder Mine main access road (National Forest System Road 205) prevents storm water discharge toward the East Boulder River. Facility Design Criteria described in the Stormwater Pollution Prevention Plan (SWPPP) promotes internal site drainage through collection and percolation structures, thereby minimizing or eliminating onsite sediment transfer to offsite areas. The following BMPs described in the Spill Prevention, Control, and Countermeasure (SPCC) Plan; SWPPP; SMC's 2016 CORP; Tailings Operations, Maintenance, and Surveillance (TOMS) Manual; and Detailed Design control and direct site storm water runoff to onsite percolation basins, resulting in zero surface water discharge except in cases of an extreme runoff event:

- Upslope storm water diversion channels
- Onsite storm water collection channels
- Storm water percolation basins
- Sediment containment basins
- Road BMPs
- Vegetative buffer zones
- Interim and permanent revegetation
- Reclamation/stabilization of surface disturbances concurrent to operations
- Monitoring and inspection activities
- Maintenance and corrective actions

The CORP indicates that the SWPPP would apply to operational, closure, and post-closure activities.

Effects Analysis

The effects analysis presented below discloses the direct, indirect, and cumulative effects of (1) the No Action Alternative, and (2) the Proposed Action. The analysis is structured around the ten criteria to determine if there would be significant impacts (40 CFR 1508.27(b)).

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.

Issue Indicator #1 - Sediment Effects on Aquatic Habitat and Biota

No Action Alternative

No change in sediment delivery to stream channels or other aquatic habitats would occur as a result of activities under the No Action Alternative. Impacts of the No Action Alternative are not expected to vary beyond those considered in the 1992 FEIS and 2012 SMC's Revised Water Management Plans and Boe Ranch LAD FEIS (DSL et al. 1992; DEQ and Forest Service 2012)

Proposed Action

Potential sediment-generating activities associated with the Project include major storm and runoff events combined with minor removal of vegetative forest cover; relocations of a road, and a soil stockpile; and potential failure of the TSF. Implementation of administrative standards, physical controls, and monitoring would minimize or eliminate the potential for offsite sediment effects.

Increased fine sediment in streams and other water bodies could reduce habitat quality and cause adverse effects on fish and other aquatic biota. For example, elevated levels of fine sediment (material less than 6.35 mm in diameter) have been shown to negatively affect salmonid habitat used for spawning, rearing, and overwintering (Chapman and McLeod 1987) and have been associated with reduced intra-gravel survival of embryos for brook trout (Hausle and Cobble 1976; Alexander and Hansen 1986) and rainbow trout (Witzel and MacCrimmon 1981; Irving and Bjornn 1984). Fine sediments can cap or fill interstitial spaces of streambed cobbles. When interstitial rearing space is unavailable, juvenile salmonids migrate until suitable wintering habitat can be found (Hillman et al. 1987).

Project storm water and sediment controls are detailed in the following SMC East Boulder Mine documents covering Project design, construction, mitigation, monitoring, and inspection protocols, activities, and reports:

- 1995-2017 Annual Water Resources Monitoring Reports
- 2011 SPCC Plan
- 2013 SWPPP
- 2018 East Boulder River Biological Monitoring Plan (EBR BMP)
- 2016 CORP
- 2018 Water Resources Monitoring Plan (Operational)
- 2019 TOMS Manual
- 2019 Detailed Design for Stage 6 TSF Expansion and Appendix F (Storm Water Management)

Project non-storm water discharge is regulated by National Pollutant Discharge Elimination System (NPDES) Permit MT-0026808. Project storm water discharge would be regulated by a new SWPPP authorized under MPDES Permit MTR000503.

Implementation of physical storm water controls and BMPs (described above in the section on **Design Feature and Mitigations**) would minimize or eliminate the potential for offsite sediment effects.

The CORP indicates that the SWPPP would apply to operational, closure, and post-closure activities.

Results of monitoring activities also suggest minimal or unlikely offsite sediment effects. In response to the 1993 East Boulder Mine Record of Decision, a cooperative sediment monitoring program was conducted jointly by the Forest Service and SMC in 2000, 2001, 2002, 2003, 2006, and 2010, measuring East Boulder River flow, turbidity, suspended sediment, and bedload sediment. According to the CORP, "During this period no changes were measured in sediment or turbidity that could be attributed to the East Boulder Mine and it was documented that the East Boulder stream system is very low in suspended sediment, bed load sediment and turbidity." Subsequent direction from DEQ and CGNF, and objectives of the 2018 EBR BMP conclude that "SMC will monitor sediment in the East Boulder River stream channel in the future only if mine construction/production activities with sediment delivery potential occur."

SMC implements a water monitoring program summarized in the 2018 Water Resources Monitoring Plan. The CORP and SWPPP both indicate that the East Boulder Mine Project site has never experienced a storm water discharge or a non-storm water discharge, and that the sediment monitoring program resulted in no detectable impacts on the East Boulder River from sediment associated with mine activities. Pursuant to protocols described in the CORP and SWPPP, monitoring and maintenance activities associated with the percolation pond and sediment retention basin would continue through the three-year closure period and through the five-year post-closure period.

The potential for sediment effects associated with the Project on aquatic habitat and biota would be minimal due to the implementation and results of administrative standards, physical controls, and monitoring activities.

Issue Indicator #2 - Pollutant (Nitrates) Effects on Aquatic Habitat and Biota

No Action Alternative

No change in pollutant delivery to stream channels or other aquatic habitats would occur as a result of activities under the No Action Alternative. Impacts of the No Action Alternative are not expected to vary beyond those considered in the 1992 FEIS and 2012 SMC's Revised Water Management Plans and Boe Ranch LAD FEIS (DSL et al. 1992; DEQ and Forest Service 2012).

Proposed Action

Sources of nitrate pollution from activities associated with the Proposed Action include TSF embankment construction from run-of-mine rockfill and the seepage of nitrates through the TSF liner that could contaminate ground water or wetlands and affect aquatic biota. Nitrate pollution can cause harmful algal blooms, which have negative effects on fish respiration by reducing oxygen levels in the water and occasionally cause fish kills.

The analysis of ground water hydrology completed by Knight Piésold Ltd. considers past water management and monitoring plans, results, and information provided in the Detailed Design for Stage 6 TSF Expansion - Revision 5 report (Knight Piésold Ltd. 2020). The results of seepage and stability analysis detailed by Knight Piésold Ltd. (2020) led to a conclusion that expanding the TSF to Stage 6 would not have any significant effect on the ground water system around the Project area in terms of ground water flow and gradients because the seepage rate is insignificant compared to the estimated East Boulder River baseflow (DEQ and Forest Service 2012, Section 3.1.2.2.1). Additionally, under the Proposed Action, all ground water quality mitigation measures that were installed after monitoring indicated elevated levels of nitrates in monitoring wells would remain in place. The nitrogen source reduction measures included ground water capture, biological treatment, the TSF embankment liner, and underdrain collection system (SMC and Hydrometrics 2016). These measures have reduced nitrogen concentrations in water to levels lower than those measured in 2015.

The Stage 6 expansion would include the use of additional TSF liner, similarly to the No Action Alternative, and would include extension of the underdrain system. Consequently, it is expected that the state ground water quality standards would continue to be met as prescribed by regulation. Moreover,

the mitigation measures would likely result in ground water concentrations well below the nitrogen nondegradation standard (7.5 mg/L). It is also expected that all applicable ground water beneficial use standards would be met during Project operation. Refer to Detailed Design for Stage 6 TSF Expansion for more information on the design features and monitoring.

SMC has a DEQ-approved ground water mixing zone and a MPDES permit. Because mitigation and monitoring measures associated with these approvals are in place, expected effects from nitrate pollutants on ground water quality and surface water quality as result of the Proposed Action would be minimal. Consequently, effects on aquatic habitat and biota also would be minimal or unlikely.

Issue Indicator #3 - Physical Disturbance and Modification to Aquatic Habitats

No Action Alternative

River bank erosion and stability assessments indicate potential for channel migration is low (Knight Piésold Ltd. 2020). Consequently, changes to stream channel form or function would not likely occur as a result of the No Action Alternative. Impacts of the No Action Alternative are not expected to vary beyond those considered in the 1992 FEIS and 2012 SMC's Revised Water Management Plans and Boe Ranch LAD FEIS (DSL et al. 1992; DEQ and Forest Service 2012).

Proposed Action

Because no work is proposed in the East Boulder River, and because physical storm water controls, design features, BMPs, and monitoring (described in the **Design Feature and Mitigations** section above and detailed in the 2016 CORP and 2013 SWMPP) would be implemented, the potential for the Proposed Action to affect aquatic habitats has been minimized. Where possible, BMPs would be installed prior to commencement of sediment-generating activities in order to contain sediment generated from work sites. Additionally, assessments of bank erosion and stability were completed to analyze erosion potential due to flood risk and evaluate risk to the TSF embankment. The assessments indicate the likelihood of channel migration is low and the Stage 6 TSF embankment would remain stable during operations and after closure (Knight Piésold Ltd. 2020). Consequently, no change in stream channel form or function is likely to occur as a result of activities under the Proposed Action.

2. The degree to which the proposed action (and alternatives) affects public health or safety.

This consideration is not relevant to aquatic habitat and biota.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

The East Boulder River is an ecologically critical area providing approximately 7 miles of aquatic habitat for YCT, a Montana species of special concern and Forest Service Region 1 sensitive species. This population is secure from competition and hybridization threats posed by nonnative salmonid species due to a series of falls and high-gradient cascades located about 1 mile downstream of the mouth of Brownlee Creek that act as a barrier to upstream fish migration. YCT in the upper reaches of the East Boulder River are a genetically unaltered core conservation population (FWP et al. 2013). Core

conservation populations have important genetic value and could serve as donor sources for refounding populations in historically occupied habitat. These population characteristics warrant the highest level of protection afforded under NFMA, the Gallatin Forest Plan (Forest Service 1987, amended in 2015), and the Cooperative Conservation Agreement for YCT in Montana (FWP 2007) to which the Forest Service is signatory. The Proposed Action would have no effects related to this conservation population of YCT as there are no activities proposed within or adjacent to the upper segments of the East Boulder River.

Wetlands occur along the East Boulder River drainage and tributaries in the analysis area. Although WT have not been detected in the Project area, these wetlands do provide suitable habitat for this Forest Service Region 1 sensitive species. The Proposed Action would have no effect on WT breeding habitat because the Proposed Action incorporates design criteria that prevent materials from being deposited in wetlands. Proposed activities such as the soil stockpile relocation may harm individuals, if present in the Project area during removal of woody ground cover, but would not likely contribute to a trend toward federal listing or loss of viability to the population or species.

No change to these unique aquatic characteristics would occur as a result of activities under the Proposed Action or No Action Alternative.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

There is some potential for effects of the Proposed Action on aquatic habitat and biota including YCT and WT. However, these effects are expected to be limited in magnitude and duration and are not expected to be highly controversial. There would be no effects from the No Action Alternative related to aquatic resources.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

There is some potential for effects of the Proposed Action on aquatic habitat and biota including YCT and WT, although these effects are expected to be minimal and limited due to design features, mitigations, and BMPs designed to reduce risk with respect to the aquatic species in and along the East Boulder River.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

It is unlikely that either alternative would establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration related to aquatic resources.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a

cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Past, present, and reasonably foreseeable land management activities have occurred and still occur within the general area of the proposed activities (Seifert 2016). Ongoing and reasonably foreseeable activities that could contribute to cumulative effects include recreation, livestock grazing, timber management, and future mining activity. The East Boulder Fuels reduction project may be implemented as early as summer 2020. No cumulative sediment effects from the East Boulder Fuels reduction project with the Proposed Action are anticipated due to implementation of administrative standards, physical controls, and monitoring activities for both projects. A conceptual proposal is being developed for a future expansion at the East Boulder Mine. Engineering design and facility locations for this expansion are not finalized at this time. Because details of the potential future expansion are not available at this time, future proposals cannot be fully considered in this analysis effort. However, continued mining activity and expansion of the existing facilities are reasonably foreseeable actions at the developed East Boulder Mine. Any future proposals will consider the cumulative effects of the Stage 6 TSF proposal on those actions.

Since the risk of direct and indirect effects on aquatic resources relative to Issue Indicators 1, 2, and 3 would be negligible under the Proposed Action and No Action Alternative, the proposed activities are not expected to compound the effects of any other past, present, or reasonably foreseeable future activities within the analysis area. Thus, no cumulative effects on aquatic species or habitat relative to Issue Indicators 1, 2, and 3 are expected within the analysis area because no measurable direct or indirect effects on aquatic habitat or species are anticipated.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

This consideration is not relevant to aquatic habitat and biota.

9. Effects to federally listed threatened or endangered species or designated critical habitat, species proposed for federal listing or proposed critical habitat, or Forest Service sensitive species and management indicator species.

One federally listed threatened aquatic species, the western glacier stonefly, has a general habitat range that overlaps the Project area; however, no suitable habitat for that species occurs within the Project area and, therefore, there is no potential to affect the western glacier stonefly.

Forest Service aquatic sensitive species and Forest Plan aquatic MIS were evaluated and disclosed for the No Action Alternative and the Proposed Action. These effects are summarized in Table 4. For YCT, wild trout, and WT, the Proposed Action, "May impact individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species" (Table 4).

Table 4. Summary of effects determinations for regionally listed aquatic sensitive species and GNF MIS.

Species	STATUS Sensitive (S) or MIS	Present in Project Area	Effects on Habitat for the Proposed Action	Determination
Yellowstone Cutthroat Trout <i>Oncorhynchus clarki bouvieri</i>	S	Yes	The Proposed Action would have minimal or unlikely effects due to sedimentation, pollutants, or aquatic habitat with implementation of administrative standards, physical controls, and monitoring activities.	MIIH
Wild Trout Rainbow Trout <i>Oncorhynchus mykiss</i> Brown Trout <i>Salmo trutta</i> Brook Trout <i>Salvelinus fontinalis</i>	MIS	Yes	The Proposed Action would have minimal or unlikely effects due to sedimentation, pollutants, or aquatic habitat with implementation of administrative standards, physical controls, and monitoring activities.	MIIH
Western (Boreal) Toad <i>Bufo boreas</i>	S	Possible	The Proposed Action would have no effect on WT breeding habitat because the Proposed Action incorporates design criteria that prevent materials from being deposited in wetlands. Proposed activities such as the soil stockpile relocation may harm individuals, if present in the Project area, during removal of woody ground cover.	MIIH
Northern Leopard Frog <i>Rana pipiens</i>	S	Possible, but not probable because of elevation	No impacts are expected.	NI

NI = No impact

MIIH = May impact Individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to the population or species

WIFV = Will impact individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability of the population or species

BI = Beneficial impact

Conclusion

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

The Proposed Action is consistent with management direction in the Gallatin Forest Plan (Forest Service 1987, amended in 2015); all Presidential Executive Orders (#12962, #11990, and #11988); and all state and national Clean Water Acts. The Proposed Action would not contribute toward federal listing or loss of viability of YCT, WT, or western glacier stonefly within the Project area; is compliant with NFMA and

FSM 2670.5 and 2672.42; and meets the intent of the Cooperative Conservation Agreement for YCT in Montana (FWP et al. 2013).

Forestwide Standards

Effects resulting from the Proposed Action or cumulatively from past, present, and reasonably foreseeable future activities would not be of sufficient magnitude or duration to negatively impact Forest Service MIS fish populations. Projectwide design criteria would maintain streambank stability and promote filtering of sediment transported by overland flows. The Project is consistent with forestwide standards for management of fisheries resources.

Management Area 8 (MA8) Standards

The Proposed Action incorporates design criteria that would result in compliance with all management area-specific standards related to management of fisheries resources in MA 8.

Management Indicator Species

YCT, rainbow trout, brown trout, and brook trout are present in Project area streams described in the existing condition narrative and sensitive species analysis. Because the Project is designed to meet Forest Travel Plan sediment guidelines and maintain other aquatic habitat attributes, populations of MIS are expected to remain viable within the entire GNF planning area.

Aquatics Extraordinary Circumstances Review

No municipal watersheds exist within the Project area. The Proposed Action "May impact individuals or habitat but will not likely contribute to a trend towards federal listing or loss of viability to the population or species" for YCT and WT. Therefore, no significant impacts or resultant extraordinary circumstances are anticipated for these resources.

No aquatic-related extraordinary circumstances or significant effects that are associated with the Proposed Action would warrant further evaluation under an environmental analysis or EIS.

Responsibility for a Revised Biological Evaluation

This Biological Evaluation was prepared based on current available information. If the Proposed Action is modified in a manner that causes effects not considered, or if new information becomes available that reveals that the Proposed Action may impact endangered, threatened, proposed, or sensitive species in a manner or to an extent not previously considered, a new or revised biological evaluation would be required.

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