

**Supplement Analysis**  
for the  
**Columbia River Basin Tributary Habitat Restoration**  
**Programmatic Environmental Assessment**  
(DOE/EA-2126/SA-44)

**Rainbow Lake Rotenone Application**  
**BPA project number 1995-004-00**

Bonneville Power Administration  
Department of Energy



**Introduction**

In December 2020, Bonneville Power Administration (BPA) and the Bureau of Reclamation completed the *Columbia River Basin Tributary Habitat Restoration Programmatic Environmental Assessment* (DOE/EA 2126) (Programmatic EA). The Programmatic EA analyzed the potential environmental impacts of implementing habitat restoration actions in the Columbia River Basin and its tributaries.

Consistent with the Programmatic EA, this supplement analysis (SA) analyzes the effects of the proposed Rainbow Lake Rotenone Application Project (Project), which would implement specific restoration actions assessed in the Programmatic EA in the upper Wigwam River watershed in Lincoln County, MT. The Project's objective is to eliminate a source of non-native Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) that contributes to the hybridization of native westslope cutthroat trout (*O. clarkii lewisi*) in the Wigwam River drainage.\* This SA analyzes the site-specific impacts of the rotenone application in Rainbow Lake to determine if the proposed project is a substantial change from the actions considered in the Programmatic EA. It also evaluates whether the proposed project presents significant new circumstances or information relevant to environmental concerns that were not addressed by the EA. The findings of this SA determine whether additional National Environmental Policy Act (NEPA) analysis is needed pursuant to 40 Code of Federal Regulations (C.F.R.) § 1502.9(d) and 10 C.F.R. § 1021 *et seq.*

**Proposed Activities**

BPA would fund Montana Fish, Wildlife and Parks (FWP) to implement the Project. The project area is located on the Ksanka Ranger District of the USFS-administered Kootenai National Forest, approximately 11 miles northeast of Eureka, MT. Rainbow Lake lies within the Ten Lakes Scenic Area that was designated as a Wilderness Study Area by the Montana Wilderness Study Act of 1977. Figure 1 provides a map of the general vicinity. The legal description of the lake is Township T37N, Range R25W, in section 8. Land access to the lake is via the USFS's Rainbow Lake Trail 89. The trailhead at the end of USFS Road 7091 is the closest point for wheeled vehicle access and is approximately two miles from the lake. The lake is approximately one mile from the Montana/British Columbia border.

\* Although not a part of this action, there are plans to re-establish an equivalent recreational fishery in Rainbow Lake by restocking the lake after removal of the Yellowstone cutthroat trout with native westslope cutthroat trout.

Rainbow Lake is a 9.5 acre lake in the Wigwam River drainage, which drains to the Elk River and ultimately Lake Kootenai (Figure 1). The outlet stream from Rainbow Lake is an intermittent unnamed stream that flows approximately 1.5 miles prior to crossing the international border. Proposed activities would be limited to Rainbow Lake and approximately 1.0 mile of outlet stream directly downstream of the lake. The project would also be completed in late summer when about 0.5 miles of the outlet stream is dry. The rotenone treatment would not occur if the outlet stream is not dry.

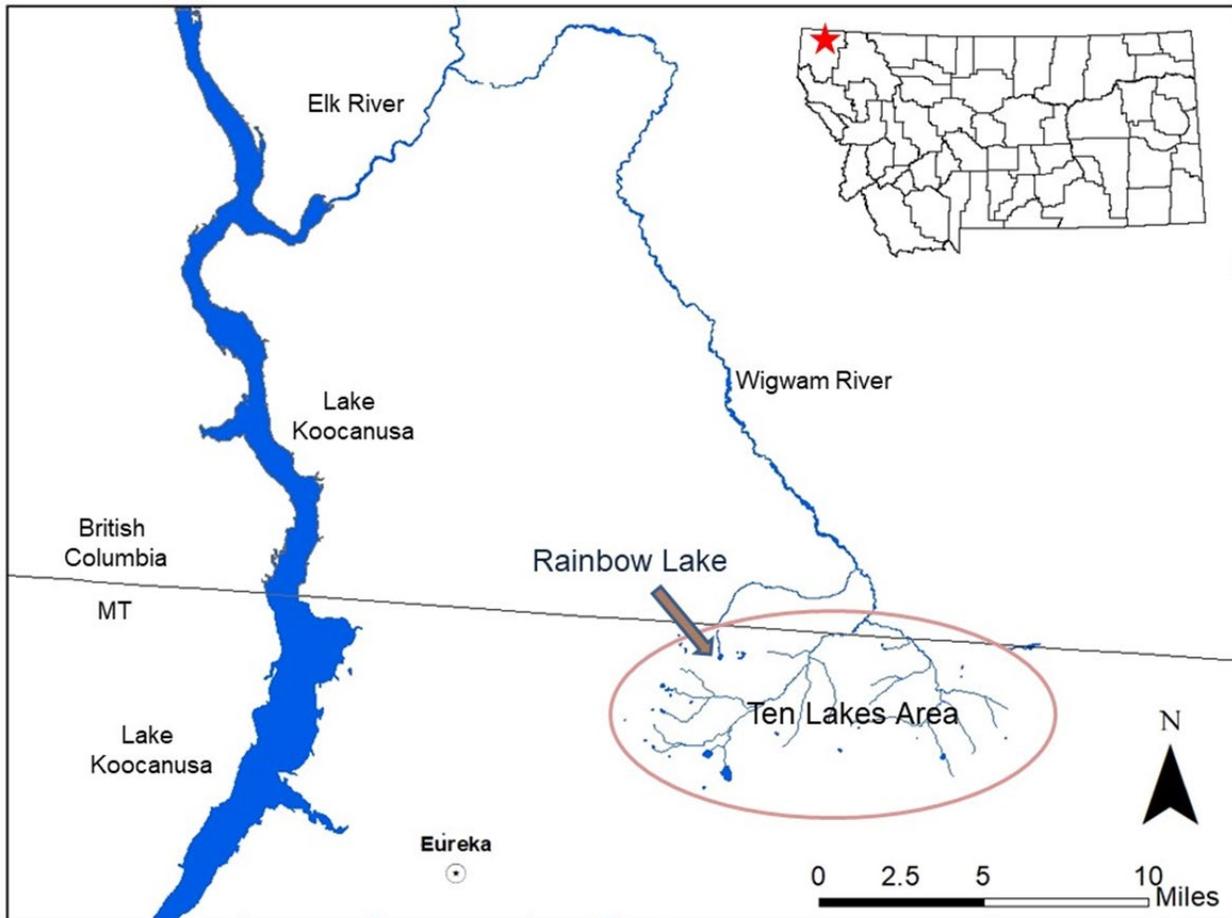


Figure 1. General location of Rainbow Lake located northeast of Eureka, MT.

The rotenone application would be conducted according to the prescribed guidelines in state and Federal pesticide permits, and all applications would be timed and conducted to minimize the impacts to non-target fish and aquatic species. The 2021 Pesticide General Permit issued on a five-year cycle by Montana DEQ authorizes FWP to apply piscicides. FWP, and any other piscicide applicator, must develop a pesticide discharge management plan as a condition for coverage under this permit. For FWP, the plan consists of procedures and protocols developed by and detailed in FWP's Piscicide Policy, the AFS Rotenone Standard Operating Procedures manual, and annual training and critique of projects provided by the FWP Piscicide Committee. The application of rotenone on USFS-managed land requires a Pesticide Use Proposal. FWP received an approved Pesticide Use Proposal permit from the USFS on July 7, 2023. The permit expires May 31, 2025.

FWP estimates the lake was likely historically fishless because of a natural waterfall barrier located about a mile downstream of the lake, and there are no hatchery records of stocking in Rainbow Lake,

which makes the origin of fish introduction in the lake unclear. Nonetheless, Rainbow Lake currently contains naturally reproducing non-native Yellowstone cutthroat trout that pose a hybridization threat to native westslope cutthroat trout in the Wigwam River drainage and the larger Kootenai River watershed.

In coordination with the USFS, FWP would remove the existing population of Yellowstone cutthroat trout from Rainbow Lake by using the piscicide rotenone. Rotenone is a fish toxicant applied with the intent of killing fish. It is proposed for this project because compared with mechanical methods (*e.g.*, netting, trapping, electrofishing, and angling), it would remove this non-native fish in a period of days as opposed to years. While other fish toxicants are available, rotenone is the only one that is registered and approved for use by the Environmental Protection Agency.

Rotenone is extracted from the roots of several plant species in the bean (legume) family. The chemical deprives aquatic gilled organisms of oxygen by interfering with cellular respiration, and is highly toxic to fish. Rotenone readily degrades through exposure to air, sunlight, and naturally occurring organic compounds present in aquatic environments.

The Project would require the use of a helicopter to deliver and remove equipment to and from Rainbow Lake which would require a landing zone near the project area. FWP proposes using the parking area at the trailhead to USFS Trail 89 located at the end of USFS Road 7091 as a helicopter landing zone. The delivery and removal of equipment would require temporary closure of USFS Road 7091 for about one day each. The two undeveloped (and non-numbered) access trails to Rainbow Lake from USFS Trail 89 (Figure 2) would also be closed during the application of rotenone. Signs would be placed at least one week before the treatment at public access points, trail heads, and area campgrounds. Signs would remain in place until rotenone and the deactivating agent in Rainbow Lake are below detectable limits. FWP expects the project to take four to seven days. FWP would coordinate all closures with the USFS at least one week prior to the project implementation to ensure adequate public notification of the anticipated access delays and closures.

The primary means of delivering the rotenone to Rainbow Lake would be to pump it into the lake from a small boat powered by a motor to facilitate complete mixing within the lake. Dispensing the rotenone would take approximately four hours. FWP would monitor the effectiveness of achieving a complete fish kill in Rainbow Lake by conducting toxicity tests on caged pathogen-free hatchery westslope cutthroat trout located at multiple locations and depths throughout the lake. FWP expects that a complete fish kill would occur within about 12 hours after complete mixing of the rotenone in the lake.

FWP does not anticipate that the rotenone-laden water in Rainbow Lake would enter the outlet stream because the outlet is expected to be dry at the time of treatment and rotenone binds readily to sediments, soil, gravel, and organic matter and these materials act as a barrier to prevent its movement into groundwater. FWP also perceives the risk of rotenone-laden water traveling downstream of the lake to be very low because they suspect very little ground/surface water connection between Rainbow Lake and the wetted portion of the outlet stream. This statement is based on the fact that, during the late summer period after the outlet stream dries up, Rainbow Lake elevation remains relatively constant, and the lake lacks a “bathtub ring” that would suggest substantial water loss from subterranean flow. However, to mitigate the risk of rotenone-treated water traveling farther than anticipated in the outlet stream, FWP proposes two measures.

First, to help ensure that aquatic life and water quality in waters downstream of the project would not be affected, rotenone would be detoxified with potassium permanganate in the lake and outlet stream the following day after rotenone is applied. Rotenone can also be deactivated with exposure to sunlight or oxidating substances. Potassium permanganate is an odorless, dry, crystalline substance and strong

oxidizer that can be mixed with stream or lake water and effectively deactivate rotenone. Potassium permanganate is often used to remove foul tastes and odors from drinking water and reduce odors at wastewater treatment plants. After a complete fish kill is achieved in the lake, FWP would begin deactivating the rotenone in the lake by applying a potassium permanganate to minimize the likelihood that rotenone-laden water enters the outlet downstream of the lake. Deactivation is accomplished after about 15-30 minutes of exposure time between the two compounds. Potassium permanganate would be applied using standard practices for this application.

Second, FWP proposes to monitor the outlet stream for the presence of rotenone using caged hatchery westslope cutthroat trout throughout the period that fish killing concentrations of rotenone persist in Rainbow Lake. Caged fish in the outlet stream would be placed at locations 2 and 3 (Figure 2) and would be closely monitored for symptoms of rotenone exposure (darting movements, fish laying on their side). Should the caged fish at either location exhibit stress, potassium permanganate would be added to the outlet stream to effectively neutralize the rotenone. Freshwater input from a tributary and seeps downstream of the proposed detox site offer additional rotenone containment safeguards by providing a > 10-fold increase in stream discharge before the stream travels into the British Columbia portion of the watershed.

Dead fish that surface in the lake would be gathered, their air bladders pierced, and sunk in the deepest part of the lake to reduce the risk of them being consumed by birds, bears, otters, mink, or other scavengers while they may still carry traces of rotenone. Dead fish naturally decay within a few days and provide nutrients to the lake that support the recovery of the food web.

FWP expects to achieve a complete fish kill in Rainbow Lake with a single rotenone application. However, if a complete fish kill is not achieved, a second treatment may be conducted the following year to achieve complete removal of the non-native fish. FWP would use environmental DNA sampling (extract DNA from water samples) to determine if a single rotenone treatment achieved a complete kill of Yellowstone cutthroat trout in Rainbow Lake.

FWP would monitor for long-term impacts to non-target species including zooplankton and amphibians in Rainbow Lake and benthic invertebrates in the outlet stream. FWP has collected monitoring data for each of these non-target species groups to characterize existing conditions and would monitor for two successive years after project completion for comparison.

Funding the proposed action would support ongoing efforts to mitigate for effects of the FCRPS on fish and wildlife in the mainstem Columbia River and its tributaries pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act) (16 U.S.C. 839 *et seq.*).

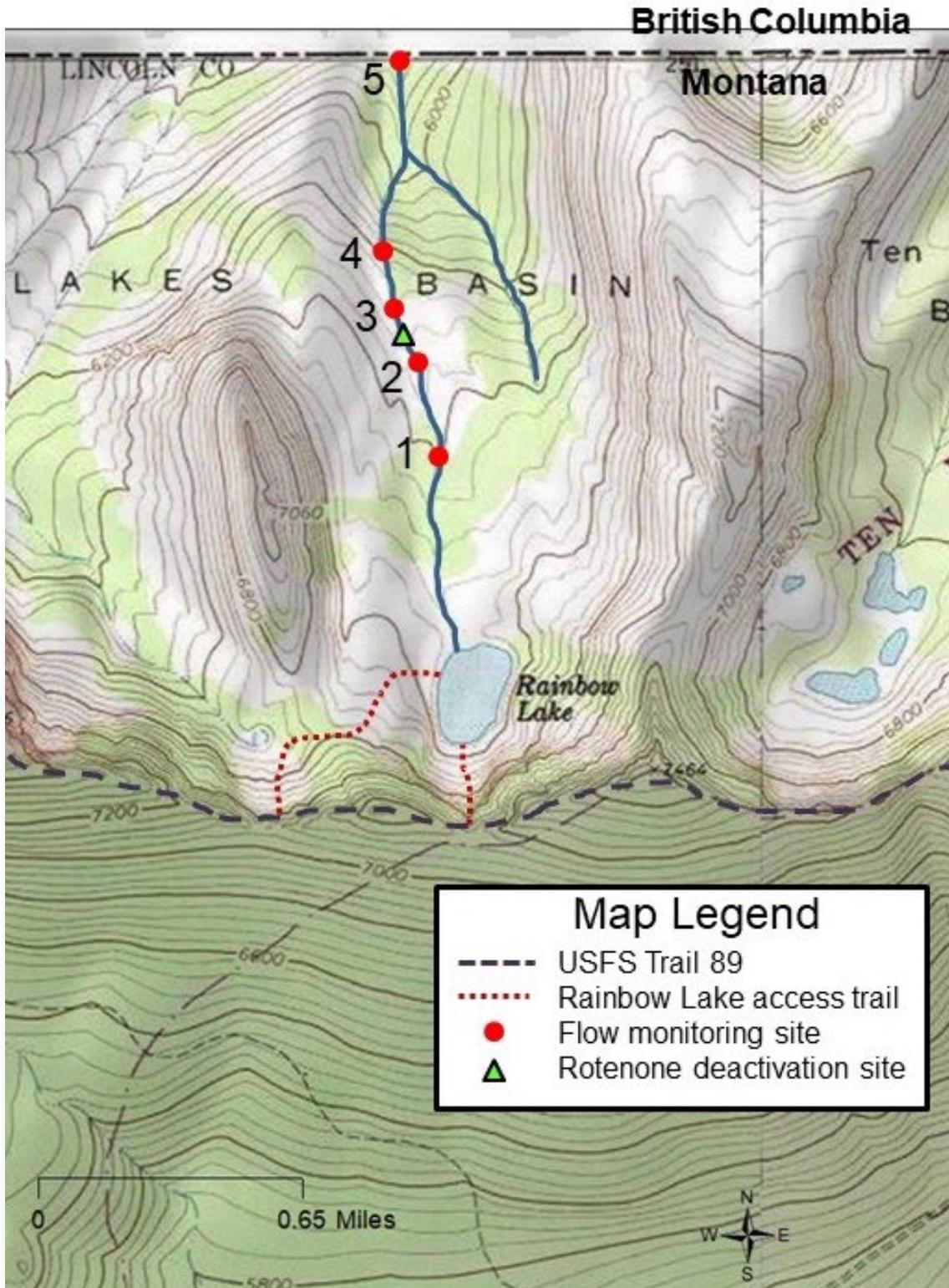


Figure 2. Project map of Rainbow Lake including access trails, flow monitoring locations, and the proposed rotenone deactivation site.

## **Environmental Effects**

Project implementation would require the use of a piscicide (rotenone) for killing fish, potassium permanganate for deactivating the rotenone, a helicopter for delivering and removing equipment and supplies, and a small boat and motor for delivering and mixing the rotenone and potassium permanganate within the lake. These restoration actions would kill fish and cause limited mortality of other aquatic species, temporarily degrade water quality, create temporary noise and vehicle emissions, and temporarily increase vehicle traffic and human activities in the project area. The typical effects of these environmental disturbances are described in Chapter 3 of the Programmatic EA, and are summarized in this document.

Below is a description of the potential site-specific impacts of applying the piscicide rotenone in Rainbow Lake and an assessment of whether these impacts are consistent with those described in the Programmatic EA. The adverse effects of this action would last from days to months, after which the aquatic biota would be expected to fully recover within a year. In the longer term, non-native Yellowstone cutthroat trout would be removed from this watershed, eliminating a source of undesirable hybridization with native westslope cutthroat trout.

### **1. Fish and Aquatic Species**

The effects of applying the piscicide rotenone to remove non-native Yellowstone cutthroat trout in Rainbow Lake are consistent with the effects and analysis described in Section 3.2.2 of the Programmatic EA, which concludes that impacts to fish and aquatic species (both “target” and “non-target”) would likely be high, since killing of fish is the purpose of the action. However, application of prescribed mitigation measures would minimize exposure of non-target species and the overall impact would be low after considering short-term adverse effects and beneficial long-term effects.

The piscicide chosen for use, rotenone, is highly toxic to fish. It is not target-specific, so it will affect fish, amphibians, and invertebrates that are not the focus of the application. At rates proposed for application, gill-respiring invertebrates such as mayflies (*Ephemeroptera*), stoneflies (*Plecoptera*), and caddisflies (*Trichoptera*), would likely be killed as described in the Programmatic EA. As described there, other species that acquire oxygen through other means may be less affected depending on concentration and duration of exposure, location in the waterbody (*e.g.*, in gravel or in the water), and maturity of the animal (effects on amphibians, in particular, would vary with the development stage of the animal, with younger individuals still dependent on gills being more susceptible, while those with developed lungs would be far less so). Application of piscicides therefore would be expected to kill target fish as well as non-target amphibians and invertebrates in and below the lake, though recolonization of treated areas by these species is anticipated within weeks or months with no long-term adverse effect.

No ESA-listed fish or aquatic species are present in Rainbow Lake. Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) is the only resident fish species, as documented by FWP fish surveys, in the lake. The overall result would be reduced distribution and abundance of Yellowstone cutthroat trout in the area. Rainbow Lake was likely historically fishless due to the waterfall barrier and Yellowstone cutthroat trout were likely stocked in the lake prior to 1960 to establish a sport fishery. Westslope cutthroat trout, a Montana state-listed fish species of concern, are common within the larger Wigwam River drainage downstream of the fish barrier on the outlet tributary to Rainbow Lake. This project would benefit westslope cutthroat trout by reducing potential sources of non-native hybridization.

It is highly unlikely that rotenone applied to Rainbow Lake would affect nearby ESA-listed threatened bull trout (*Salvelinus confluentus*), which are common in the Wigwam River drainage, including Rabbit Creek, one of its tributaries. The unnamed outlet tributary from Rainbow Lake is a tributary to Rabbit Creek, but bull trout are not found upstream of the natural barrier falls. Therefore, the proposed action would have no effect on bull trout or their habitat.

Western toad (*Anaxyrus boreas*) is the only Montana state-listed amphibian species of concern which may be found in Rainbow Lake. The overall result would be reduced distribution and abundance of any western toads present in the project area during project activities. Timing application of piscicide in late summer through early fall would be past the period of metamorphosis for western toads. If gilled forms were still present, they would be unlikely to survive the winter, so mortality associated with piscicide would not be additive (Bryce Maxell, Montana Natural Heritage Program (MNHP), personal communication). While some individual toads may be killed, the effects of rotenone treatment on the western toad population would be minor and short-term.

Similar effects would be expected for any non-listed aquatic species inhabiting the project area during project activities.

## 2. Wildlife

The effects of applying the piscicide rotenone to remove non-native Yellowstone cutthroat trout in Rainbow Lake are consistent with the analysis in Section 3.3.5 of the Programmatic EA, which concludes that effects to wildlife would be moderate in the short-term but low in the long-term. Although wildlife may be exposed to rotenone as a result of this activity, they are unlikely to experience lethal effects because rotenone application at the proposed rate would not exceed known levels of toxicity, while the short duration of application would preclude chronic exposure. Minor disturbances by human and mechanical activity, as detailed below, would likewise be temporary.

Three ESA-listed wildlife species may be found at Rainbow Lake: the threatened grizzly bear (*Ursos arctos horribilis*) and Canada lynx (*Lynx canadensis*) or their respective designated critical habitat, and the proposed North American wolverine (*Gulo gulo*). USFS informally consulted with the USFWS to determine whether project activities would affect these ESA-listed species. USFWS reviewed the proposed project activities and location as described in a biological assessment, prepared by the USFS in cooperation with FWP, and concurred that the activities *may affect, but are not likely to adversely affect* grizzly bear or Canada lynx or its designated critical habitat, and that the activities would *not likely jeopardize the continued existence* of the North American wolverine.

Review of MNHP's database on animal species of concern found several animal species of concern with potential to be in the project area (Table 1).

Table 1. Animal species of concern within the project area.

<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>State Status</b>	<b>USFS Status</b>
Bufoidea	Western toad	<i>Anaxyrus boreas</i>	S2	Sensitive
Anatidae	Harlequin duck	<i>Histrionicus histrionicus</i>	S2B	Sensitive
Strigidae	Great gray owl	<i>Strix nebulosa</i>	S3	
Picidae	Black-backed woodpecker	<i>Picoides arcticus</i>	S3	Sensitive
Picidae	Pileated woodpecker	<i>Dryocopus pileatus</i>	S3	
Accipitridae	Northern goshawk	<i>Accipiter gentilis</i>	S3	
Accipitridae	Golden eagle	<i>Aquila chrysaetos</i>	S3	
Accipitridae	Bald eagle	<i>Haliaeetus leucocephalis</i>		Sensitive

Falconidae	Peregrine falcon	<i>Falco peregrinus</i>	S3	Sensitive
Corvidae	Clark's nutcracker	<i>Nucifraga columbiana</i>	S3	
Fringillidae	Cassin's finch	<i>Haemorhous cassinii</i>	S3	
Fringillidae	Evening grosbeak	<i>Coccothraustes vespertinus</i>	S3	
Fringillidae	Gre-crowned rosy-finch	<i>Leucosticte tephrocotis</i>	S2	
Certhiidae	Brown creeper	<i>Certhia americana</i>	S3	
Turdidae	Veery	<i>Catharus fuscescens</i>	S3B	
Turdidae	Varied thrush	<i>Ixoreus naevius</i>	S3B	
Vespertilionidae	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	S3	Sensitive
Vespertilionidae	Yuma myotis	<i>Myotis yumanensis</i>	S3	
Vespertilionidae	Long-legged myotis	<i>Myotis Volans</i>	S3	
Vespertilionidae	Long-eared myotis	<i>Myotis evotis</i>	S3	
Vespertilionidae	Little brown myotis	<i>Myotis lucifugus</i>	S3	
Vespertilionidae	Fringed myotis	<i>Myotis thysanodes</i>	S3	
Vespertilionidae	Silver haired bat	<i>Lasionycteris noctivagans</i>	S4	
Bovidae	Bighorn sheep	<i>Ovis canadensis</i>		Sensitive
Mustelidae	Wolverine	<i>Gulo gulo</i>	S3	Proposed
Felidae	Canada lynx	<i>Lynx canadensis</i>	S3	Threatened
Canidae	Gray wolf	<i>Canis lupus</i>		Sensitive
Ursidae	Grizzly bear	<i>Ursos arctos</i>		

S2 = at risk because of very limited and/or potentially declining abundance, range, or habitat, making it vulnerable to extirpation in the state.

B = Breeding populations are potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.

S3 = Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.

Sensitive = population viability is a concern on Forest Service lands as evidenced by a significant downward trend in population or habitat capacity.

Proposed = any species that is proposed under the *Federal Register* to be listed under section 4 of the Endangered Species Act

Threatened = listed as threatened under the Endangered Species Act

One Montana state-listed amphibian species of concern, the western toad, may be found in Rainbow Lake. As discussed above under Fish and Aquatic Species, this project would have little effect on western toad because it would occur after metamorphosis and because western toads have tremendous reproductive capacity, which makes them resilient to short-term disturbance.

The MNHP database has records of several bird species of concern in the project area, most of which inhabit terrestrial environments and rely on terrestrial food sources. Fieldworkers in the project area would likely disturb them in the short-term, although some species are tolerant of human presences. Although some birds may drink treated water, its exceptionally low toxicity coupled with the short duration of rotenone toxicity in the environment would preclude health risks to birds drinking water.

The Wigwam River drainage may provide breeding habitat for harlequin duck. However, the outlet stream is likely too small a stream to provide quality nesting or foraging habitat for this species. Nevertheless, in the unlikely scenario that harlequin ducks were present in the project area, the following factors would help prevent adverse impacts on this species. Harlequin ducks migrate to mountain streams in the Intermountain West from the Pacific Coast for breeding. Breeding birds arrive in late April to early May, with males leaving in June and females and young departing from late July to

early September. Ducklings would be fledged and close to out-migrating during the proposed project period if they had not already left. Fieldworkers would be a short-term disturbance to harlequin ducks if still present. Rotenone could increase the availability of invertebrates through drift of killed invertebrates. Exposure to rotenone through eating invertebrates or drinking water would not present a health risk. These factors would result in short-term and minor disturbance to harlequin ducks and the possible benefit of greater accessibility of rotenone-killed invertebrates.

Golden and bald eagles may scavenge dead fish but the low concentration of rotenone in fish tissues and its rapid breakdown in the environment would preclude health risk to eagles.

Seven bat species (Table 1) may be present in the project area during implementation. Although their respective habitats may differ slightly, the overall potential for impact of the proposed actions can be generalized for all species. The proposed activities would not impact these habitats, which bats use for roosting and hibernation. Bats are generally nocturnal creatures that eat flying insects. The proposed actions' relatively short-term reduction of emergent aquatic invertebrates would have minor short-term effects on these seven species of bats given the relatively small area of impact and the bats' ability to forage in nearby areas not impacted by the proposed activities.

The project area is within likely wolverine habitat. Wolverines have been proposed for listing and protection under the Endangered Species Act, and the State of Montana considers the species at potential risk due to limited or declining numbers, range, or habitat. Wolverines inhabit alpine tundra and boreal and mountain coniferous forests and are mobile within large home ranges. The presence of fieldworkers may temporarily displace them from a small portion of their home range. Although wolverines are opportunistic in their food habits and could eat rotenone-killed fish or drink rotenone-treated water, as discussed for other species above, the low concentrations and short duration of rotenone in the environment would not pose a health concern to wolverines. Disturbance to wolverines stemming from the project would be minor and temporary, as wolverines would be resilient to human activities in a small portion of their home range for the duration of the project.

Canada lynx likely inhabit this region of northwest Montana but their presence, if any, would be confined to Engelmann spruce-subalpine fir communities and areas proximate to dense forest cover and away from forest openings and meadows. Canada lynx are specialists and prey mostly on snowshoe hare but will switch to red squirrels or grouse when hare populations are limited. The project activities may temporarily displace the hare, thereby also dispersing Canada lynx in the project area. If present during treatment, a Canada lynx could be exposed to rotenone treated water; however, the exposure would be for too short of a duration at too low of a concentration to cause a health risk. Canada lynx would be unlikely to scavenge dead fish. Canada lynx would be most sensitive to large-scale changes in terrestrial habitat, which would not occur with this proposed action. The rarity of Canada lynx in the project area—coupled with their habitat and food preferences and the short duration of project implementation—would result in negligible effects on Canada lynx.

Grizzly bears are present in the project area and seen with relative frequency. Project activities including aircraft operation and rotenone application by fieldworkers may disturb or temporarily displace grizzly bears, and conflict between bears and humans would also be possible. The proposed action would mitigate disturbance to grizzly bears by requiring that all attractants at the project site—including rotenone, food, and garbage—be secured in bear-proof containers or behind electric fences.

Fieldworkers would carry bear spray and be trained in bear country safety practices, such as safe food storage and noise making. Handling, transporting, and storing dead fish would increase the risk of conflicts with grizzly bears in the remote project area, so fish would be left to decay. Grizzly bears do not rely on fish as a primary food source at this elevation but may opportunistically scavenge fish carcasses.

They may also be exposed to rotenone-treated water, though the low concentration and short duration of exposure from consumption of dead fish or treated water would not pose a health risk. In summary, the short-term presence of fieldworkers and dead fish may cause conflicts with grizzly bears, but adherence to safety practices would decrease the potential for such conflicts to be detrimental to humans or bears. This project would accordingly have a low impact on grizzly bears.

The project site is within the range of the gray wolf. Various packs may use this area at times but are not dependent on the lake or fish in the lake for food. The project's impacts to this species would be low for the same reasons as the grizzly bear.

Presence of aircraft and fieldworkers may temporarily disturb wildlife and displace animals from occupied habitat. Human presence would be most likely to disturb large mammals, but this disturbance would be short-term and minor. Conservation and monitoring often brings fieldworkers into remote areas, and this project would be similar to common practice. In summary, the effects of the proposed action would not contribute to Federal listing or loss of population viability for any potentially affected species within the analysis area.

### **3. Water Resources**

The effects of applying the piscicide rotenone to remove non-native Yellowstone cutthroat trout in Rainbow Lake are consistent with the analysis in Section 3.3.2 of the Programmatic EA, which concludes that the impacts to water resources would be low.

Section 3.3.2.2.1 of the Programmatic EA examines effects on water quantity. The project would not affect water quantity because it would not involve water withdrawals or changes to existing hydrology.

Section 3.3.2.2.2 of the Programmatic EA examines effects on water quality. The proposed project is designed to intentionally introduce a pesticide to surface water to remove unwanted fish. The impacts would be short term and minor. Rotenone is a pesticide registered with the Environmental Protection Agency and is safe to use for removal of unwanted fish, when handled properly.

The rotenone added to Rainbow Lake would be deactivated after FWP is certain of a complete fish kill, which FWP expects to take no longer than 1-2 days. FWP does not expect rotenone-laden water from Rainbow Lake to enter the outlet stream because the project would be completed in late summer when about 0.5 miles of the outlet stream is dry. However, in the unlikely event of subsurface migration of rotenone-laden water from the lake to the outlet stream, the rotenone product label and FWP policy would require deactivation with potassium permanganate to prevent toxic levels of rotenone from proliferating beyond the treatment area. FWP would use caged hatchery westslope cutthroat trout to determine if rotenone is present in the outlet tributary. If this scenario occurs, FWP would immediately commence deactivation in the stream and continue those operations until the outlet stream is safe for fish. Distress or the lack thereof in these caged fish indicates whether neutralizing is effective. Application of potassium permanganate would continue until caged fish placed in the outlet stream can survive for four hours with no stress symptoms.

No contamination of groundwater is anticipated as a result of this project because groundwater leaving Rainbow Lake must travel through bed sediments, soil, and gravel, all substances with which rotenone is known to bind. Case studies in Montana have concluded that rotenone movement through groundwater does not occur (FWP unpublished data). FWP has sampled wells and groundwater in several piscicide projects that removed fish from ponds, finding no rotenone or inert ingredients of the selected formulation at distances ranging from 65 to 200 feet from the treated waters. Likewise, application of piscicide to streams has not resulted in contamination of neighboring wells or groundwater. In 2015 and 2016, Soda Butte Creek flowing through Cooke City and Silver Gate, Montana was treated with

rotenone. Wells drawing water from the same open aquifer as the treated stream were sampled during and after the treatment and all found to be free of rotenone.

#### **4. Vegetation**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.3 of Programmatic EA. Section 3.3.3.3 of the Programmatic EA describes overall moderate impacts to vegetation after considering moderate short-term adverse effects and beneficial long-term effects. No ESA-listed plant species or other sensitive plant species have been documented within the project area; therefore, this project is anticipated to have less impact than that described in the Programmatic EA.

Rotenone does not affect plants at the concentrations used to kill fish. The only anticipated impacts to plant species would be a result of trampling by the personnel during application of the rotenone or potassium permanganate to the lake or stream. Any impacts from trampling are expected to be short term and minor and would likely be fully recovered within one growing season. Impacts to plants would also be minimized by staying on existing trail systems as much as possible. As a result, it is expected that the effects of the project activities on vegetation would be low and consistent with the analysis in the Programmatic EA.

#### **5. Wetlands**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.4 of the Programmatic EA, which concludes that the overall impacts to wetlands would be low. As a non-persistent chemical, rotenone breaks down quickly and does not accumulate in the water, soil, or plants. Potassium permanganate is a strong oxidizer that rapidly breaks down. The break-down products are common in nature and have no deleterious environmental effects at concentrations proposed. As a result, it is expected that the effects of the project activities on wetlands would be low.

No other activities are proposed that would have the potential to impact wetlands.

#### **6. Geology and Soils**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.6 of the Programmatic EA, which concludes that the long-term impacts to geology and soils would be low to moderate depending on the actions undertaken. As described above under Wetlands, rotenone breaks down quickly and does not accumulate in the water, soil, or plants. As a result, it is expected that the effects of the project activities on geology and soils would be low.

No other activities are proposed that would have the potential to impact geology and soils.

#### **7. Transportation**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.7 of the Programmatic EA, which concludes that the impacts to transportation would be low. The project activities would not affect any roads. No roads would be permanently closed or blocked and no changes to existing routes would occur. Additionally, Rainbow Lake is not accessible by roads. Project activities would therefore have no effect on transportation. Trails are a component of the transportation system. Impacts to trails are discussed in the "Recreation" section below.

#### **8. Land Use and Recreation**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.8 of the Programmatic EA, which states that land use practices underlying project sites would not be changed for most projects. There would be no change to land use at Rainbow Lake as a result of the project activities. The property is currently within the publicly accessible Ten Lakes Scenic Area that was

designated as a Wilderness Study Area by the Montana Wilderness Study Act of 1977. This condition would remain following the rotenone application.

The project would require restricting public access to the lake via USFS Trail 89. The access closure would last one to two days. This would temporarily displace recreational users on the trail and at the lake. There are other trails and lakes within the area to serve as recreational alternatives during the displacement, however. The project would also reduce angling opportunities at Rainbow Lake. The natural fish barrier on the outlet stream of the lake would prevent natural recolonization of the lake from downstream fish-bearing waters. However, upon removal of the fish, the loss of angling would result in displacement of recreational fishing at the lake, but there are other lakes within the area to serve as alternatives for fishing. These levels of effect are consistent with Section 3.3.8.2 of the Programmatic EA, which describes low to moderate impacts to recreational opportunities.

### **9. Visual Resources**

The effects of applying the piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.9 of the Programmatic EA, which concludes that the impacts to visual resources would be low but evaluated on a site-specific basis for each project. As previously stated, dead fish that surface in the lake would be gathered, their air bladders pierced, and sunk in the deepest part of the lake. Thus, there would be no change to visual resources at Rainbow Lake as a result of the project activities.

### **10. Air Quality, Noise, and Public Health and Safety**

The effects of applying piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.10 of the Programmatic EA, which concludes that impacts to air quality, noise, and public health and safety would be low. As noted in Section 3.2.3.2.3 of the Programmatic EA, although workers that handle and apply the pesticides would likely be exposed, they would be protected by wearing appropriate personal protective equipment and utilizing prescribed application techniques, which would minimize the frequency and intensity of pesticide exposures. Additionally, recreationists in the area would likely not be exposed to the treatments because a temporary closure would preclude any from being in the area. Proper warning through news releases, signage at the project area, road closure, and administrative personnel in the project area should be adequate to keep unintended recreationists from being exposed to any treated waters. Administering application in late summer would further reduce exposure due to the relatively low number of users in this area, so there would be low effects on public health and safety.

Air quality and noise would be temporarily affected by project activities. The helicopter and motor for the boat used for transport and delivery of project activities would generate noise and exhaust emissions. These effects, though inconsistent with the values for which Wildernesses are established and used, would be temporary and minor. Moreover, since Rainbow Lake would be inaccessible to the public, and the vehicle activities would occur during only one or two days, this noise and exhaust would be unlikely to impact the public. This level of impact would be low.

### **11. Cultural Resources**

The effects of applying piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.11 of the Programmatic EA, which concludes that the impacts to cultural resources would be resolved through the National Historic Preservation Act Section 106 process. A BPA archaeologist reviewed the proposed activities and determined that the proposal is a type of activity that does not have the potential to cause effects on any kind of prehistoric or historic resource, even if such resources were in the project area (BPA CR No. MT 2022 012).

## 12. Socioeconomics and Environmental Justice

The effects of applying piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.13 of the Programmatic EA, which concludes that impacts to socioeconomics and environmental justice would be low. As described in the Programmatic EA, the restoration action would not require additional permanent employees or that individuals leave the local area or relocate within it. There would be no effect on housing available for local populations. This project would not displace people or eliminate residential suitability from lands being restored, or from lands near the site. The project would generate short-term employment for those directly implementing the restoration actions and would provide small short-term cash inputs to local businesses for fuel, equipment, and meals. This degree of effect would be low.

There are no environmental justice populations present on the National Forest lands that could be affected by this project; therefore, there would be no impacts to environmental justice populations.

## 13. Climate Change

The effects of applying piscicide rotenone in Rainbow Lake are consistent with the analysis in Section 3.3.14 of the Programmatic EA, which concludes that impacts to climate change would be low. Any effects to air quality would be caused by short-term exhaust emissions from machinery and equipment (helicopter, motor for boat, passenger trucks) used for the project activities. These effects would be minor and temporary. Given the short duration of project activities and the small number of vehicles and equipment used, the impact from greenhouse gas emissions from exhaust would be low and therefore, the potential for the activities to accelerate climate change would be extremely low.

### **Findings**

BPA finds that the types of actions and the potential impacts related to the proposed Project are similar to those analyzed in the *Columbia River Basin Tributary Habitat Restoration Programmatic Environmental Assessment* (DOE/EA 2126) and Finding of No Significant Impact. There are no substantial changes in the EA's Proposed Action and no significant new circumstances or information relevant to environmental concerns bearing on the EA's Proposed Action or its impacts within the meaning of 10 C.F.R. § 1021.314(c)(1) and 40 C.F.R. §1502.9(d). Therefore, no further NEPA analysis or documentation is required.

/s/ Brenda Aguirre

Brenda Aguirre  
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Concur:

/s/ Sarah T. Biegel

Sarah T. Biegel  
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