



National Park Service
U.S. Department of the Interior
Glacier National Park
West Glacier, Montana

Finding of No Significant Impact Akokala Creek Fish Passage Barrier

Background

In compliance with the National Environmental Policy Act of 1969 (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with a proposal to construct a fish passage barrier on Akokala Creek downstream of Akokala Lake. Akokala Lake, located in the backcountry of the park's North Fork District, supports a genetically distinct population of bull trout (listed as threatened under the Endangered Species Act). Genetic testing from 2008 suggests genetically pure westslope cutthroat trout (a state listed Species of Concern) are also present within the upper and lower Akokala drainage. As a direct tributary of the North Fork of the Flathead River, the Akokala drainage is very susceptible to invasion by non-native lake trout, rainbow and possibly brook trout. Non-native fish can affect native fish populations through predation, hybridization, and competition and are imperiling populations of bull trout.

Non-native lake trout began to appear in park waters west of the Continental Divide in the late 1950s and early 1960s via the Flathead River system. Of the seventeen lakes on the west side of the park that support bull trout, twelve are accessible to lake trout and nine have been invaded. Three are at risk of invasion because there are no physical barriers to preclude lake trout invasion, and one of those has already been invaded by brook trout. Akokala Lake is one of the last bull trout supporting lakes on the west side of the park that is at risk of invasion but has not yet been colonized by non-native lake trout. Such status is extremely rare, not only in Glacier National Park, but throughout the Flathead River drainage.

Lake trout are known to cause major adverse impacts to native fish populations, as has been documented in Kintla, Bowman, and Logging lakes, Lake McDonald, and numerous other lakes where lake trout have become established. In waters where they are introduced, lake trout generally replace bull trout as the dominant aquatic predator; competition and predation are the most likely mechanisms. Lake trout also live longer and spawn in lakes where they likely benefit from expansive juvenile rearing habitat. This gives them a reproductive advantage over bull trout and westslope cutthroat trout, which spawn in streams and tributaries where spawning and rearing habitat is generally more limited and is vulnerable to events such as flooding, fire, and drought.

Bull trout populations in some park lakes appear to be at imminent risk of functional extinction, which means their populations would no longer be self-sustaining and would not play a significant role in the ecosystem. Fredenberg (2003) concludes that in lakes of the Rocky Mountains, conversion of unique bull trout ecosystems to lake-trout dominated systems appears to be a common result once lake trout are established. Data from Glacier National Park show that lake trout are increasing in abundance and bull trout are in decline; in park lakes where monitoring data exist, lake trout have replaced bull trout as the dominant aquatic predator (Downs et al. 2011). The colonization of several of the park's lakes by lake trout and the

subsequent decline of bull trout in the park make protecting remaining bull trout populations a high priority.

In addition to lake trout, rainbow and brook trout are other recent invaders into the park's western waters. Rainbow trout are invading North Fork of the Flathead tributaries both within and outside the park and threaten westslope cutthroat trout populations with competition and hybridization. Genetic testing from 2008 suggests genetically pure westslope cutthroat trout are present within the upper and lower Akokala drainage. But in the past few years, a westslope cutthroat-rainbow trout hybrid was documented migrating into Akokala Creek during springtime (presumably to spawn) and genetic testing in 2008 and 2009 of juvenile westslope cutthroat trout in lower Akokala Creek showed that westslope cutthroat-rainbow trout hybridization was beginning to occur in the drainage. The hybrids appeared to be recent immigrants; this combined with the rate at which hybridization typically spreads likely means that hybridization has not yet occurred in the upper part of the creek. While brook trout are not currently known to be present in the North Fork, the species occurs in tributaries of the Middle Fork of the Flathead River, and the potential exists for brook trout to invade the North Fork and its tributaries, including Akokala Creek. Brook trout can outcompete westslope cutthroat trout and hybridize with bull trout.

Given the number of lakes that have already been invaded, it is clear that Akokala Lake is at risk of invasion by non-native lake trout and increasing levels of hybridization between westslope cutthroat and rainbow trout; expanded invasion by rainbow trout appears especially imminent. Preliminary evidence suggests that habitat suitability in Akokala Lake is good for rainbow trout and marginal for lake trout (due in part to the lake's relatively shallow depth). But because the bull trout population at Akokala Lake is small (estimated at less than 30 reproducing adults), it could be readily impacted by lake trout migrating up the drainage, even without an established lake trout population.

Glacier National Park is also at high risk of critical habitat alteration from glacier and snow loss due to climate change. The most significant factors associated with climate warming likely to impact native trout populations in the western United States include changes in stream flow, warmer water, and the increasing frequency and intensity of disturbances such as rain-on-snow events in the fall and winter, altered precipitation patterns, and wildfire (Williams et al. 2009). These types of alterations to the park's ecological systems will compound existing stressors to native fish populations, such as impacts from invasive species. While climate change impacts are difficult to predict, changes in habitat conditions such as alterations of water temperature and flow patterns, including mid-winter flooding of spawning areas, are expected and would likely adversely impact native fish and ultimately favor non-native species. For example, climate change appears to be accelerating the spread of hybridization between native westslope cutthroat trout and non-native rainbow trout in the Flathead River system (Muhlfeld et al. 2014). The park's high elevation watersheds will provide important refugia for bull trout and other native fish from the stressors of climate change. Ensuring the availability of habitat that is free of lake trout, brook trout, and rainbow trout will be essential in maintaining this safeguard.

Because Akokala Lake supports westslope cutthroat trout and a genetically distinct population of bull trout, and because the lake appears to be free of non-native species, its conservation is critical. The *Action Plan to Conserve Bull Trout in Glacier National Park* (Fredenberg et al. 2007), developed by Montana State University and the U.S. Fish and Wildlife Service (USFWS) to conserve the long-term abundance, distribution and genetic diversity of bull trout in the park, identified Akokala Lake as among the highest priorities for consideration for placement of a fish passage barrier. Therefore, a fish passage barrier below Akokala Lake is necessary to protect one of the last lakes vulnerable to lake trout invasion and to protect native fish, including

westslope cutthroat trout and one of the park's last remaining adfluvial bull trout populations, from non-native invasive fish.

Selected Action

Alternative B, Construct a Fish Passage Barrier on Akokala Creek, is the preferred alternative and the NPS's selected action because it best meets the purpose and need for the project as well as the project objectives to:

- Reduce the potential for non-native fish, including invasive lake trout and brook trout, to enter Akokala Lake and the upper Akokala drainage.
- Protect the integrity of native fish populations in the face of the potential added stressors associated with climate change.
- Protect a genetically distinct population of the threatened bull trout in the upper Akokala drainage, and thereby assist with bull trout conservation efforts on a regional scale.
- Protect the native westslope cutthroat trout population in Akokala Lake and the upper Akokala drainage from expanding hybridization with non-native rainbow trout.
- Conserve and maintain the natural condition of the park's recommended wilderness by protecting native fish populations and the ecological integrity of the backcountry lakes they inhabit.

Under this alternative, the NPS will construct a fish passage barrier in Akokala Creek downstream of Akokala Lake. The barrier will force much of the flow into the middle of the channel and over the center of the structure, thereby serving as a velocity and height barrier for fish attempting to migrate upstream. The barrier will not impede downstream movements of native fish.

The height of the Akokala Creek barrier will vary across its length, ranging from approximately five feet tall in the center to approximately ten feet tall at the banks. The structure will span the width of the stream channel, extending onto either bank where the ends will be anchored. The barrier will consist of logs, rock-filled log cribs and rock-filled gabions (metal cages) or other similar functioning structures. It will also include a sloped, hardened splash pad, or apron, on the downstream side of the structure constructed of gabions and rock. Concrete may be used to reinforce the structure and/or apron as needed. If necessary, a screen may be installed on top of the center of the barrier to further block fish from jumping or swimming upstream at low flows.

The barrier will be constructed by hand, using as much native material as possible. Rocks used to fill the gabions will be found onsite, and the logs will be obtained from standing dead timber as well as live trees. An estimated 30 trees, approximately, should supply the necessary logs; downed timber will be used when possible, provided it is sound enough to provide structural durability over the long term. The logs will be collected and/or cut onsite with chainsaws and dragged to the work area using hand tools. To minimize ground disturbance, smaller diameter "roller logs" will be placed across the path of the log that is being hauled, and the logs will be rolled over the ground. Trees will be selected for removal from areas that are not readily visible from the Akokala Lake Trail. Some downed logs or brush may be cut or moved to facilitate off-trail access from the Akokala Lake Trail to the worksite.

A temporary diversion dam may be used to temporarily dewater the work area during construction. A small bypass channel may be constructed around the work site and lined with plastic as necessary. The diversion will be removed after the work is completed. Backpack electrofishing will be used as necessary to remove any fish from any sections of dewatered stream during the project. Some hand excavation along the creek banks may be necessary to

anchor the barrier into the banks and ensure no openings are left that fish could fit through. Any disturbance to physical stream habitat will be repaired upon completion of the project.

In addition to chainsaws, other motorized equipment that may be used onsite during the project include one or two water pumps, a rock drill, a small gas-powered portable generator, and other mechanized hand tools as necessary. If concrete is used, it will be mixed onsite, by hand, if possible; a small, portable, electric concrete mixer may be used depending on the necessary volume/quantity of concrete. The water pumps will be used to help divert water if necessary, the rock drill will be required to anchor the structure to boulders or logs, and the generator will be needed to charge equipment and/or batteries and run the electric concrete mixer if necessary. Traditional hand tools will be used whenever possible.

Pack stock will be the primary method for bringing equipment and supplies to the work site. Three round-trip helicopter flights (approximately, with one or two flights expected on one or two days, likely followed by a final flight on a subsequent day) will be required to haul equipment and materials that cannot be packed on stock and to remove equipment that cannot be packed out after the project is complete. Equipment and materials brought in by helicopter will be transported and delivered to the work site as long-line sling loads. Standard park-specific NPS administrative helicopter flight policies and procedures will be followed for all flights. Flight times are not anticipated to exceed 45 minutes one way between West Glacier and the staging area (likely in the Polebridge vicinity), and 45 minutes round trip between the staging area and the work site.

The barrier will be constructed by NPS trails crew with oversight and support from the park's fisheries biologist and the engineering firm that developed the design. The work crew (estimated at six) will camp at the Akokala Lake campground during the work period. Work will occur in the late summer and fall (late August-October), during low water flow periods. The project is anticipated to require an estimated four to five weeks during the first season (anticipated for 2014) and possibly another one to two weeks the following year. If second year work is necessary, we do not anticipate the need for helicopters or tools other than those typically used by NPS trail crews during the summer trail maintenance season. Work will begin each day no earlier than one hour after sunrise and will stop no later than one hour before sunset.

The completed Akokala Creek fish barrier may require maintenance following the first spring runoff after completion. Future maintenance of the barrier will then be expected infrequently (approximately every seven to ten years) and should not require helicopter use.

Mitigation Measures

The following mitigation measures will minimize the degree and/or severity of adverse effects and will be implemented during the project:

Fisheries

- Electrofishing will be conducted to remove fish in the project vicinity immediately prior to commencement of work.
- Work will occur during low water periods to minimize sediment generation and physical habitat disturbance.
- Protocols to prevent Aquatic Invasive Species from entering the waterway will be followed.

Wildlife and Threatened and Endangered Species and Species of Concern

- Helicopters will avoid flying directly over Bowman or Akokala Lake, and will avoid other sensitive locations. Flight paths will be designated so as to avoid open alpine meadows

where grizzly bears that are present do not have access to cover.

- The helicopter will fly at a minimum of 2000 feet AGL over the park whenever possible, depending on mountainous topography, and except when it is landing or taking off or when it is delivering supplies via long line.
- Work will begin and helicopter flights will occur no earlier than one hour after sunrise and will stop no later than one hour before sunset to minimize disturbances to foraging or migrating bald eagles, common loons, grizzly bears, and other wildlife.
- Work crews will be trained on appropriate behavior in the presence of wildlife and on proper storage of food, garbage, and other attractants.
- The work will not occur until late summer, when critical nesting, denning, and brood rearing periods are over.
- If standing dead and live trees are required for the project, they will first be assessed by NPS staff for wildlife use. Trees showing signs of foraging or that have cavities, sloughing bark, or broken tops will be avoided if possible.
- Any amphibians encountered will be moved out of the immediate work area.

Vegetation

- All equipment and materials used at the site will be cleaned and inspected prior to transport to prevent the spread of non-native invasive plants and aquatic invasive species.
- Glacier National Park's Best Management Practices will be implemented to minimize the extent of impacts.
 - Disturbance to vegetation will be avoided as much as possible and contained to as small a footprint as possible while meeting project objectives.

Soils

- Glacier National Park's Best Management Practices will be implemented to minimize the extent of impacts.
 - Disturbance to the ground will be avoided as much as possible and contained to as small a footprint as possible while meeting project objectives.
- Erosion control measures that provide for soil stability and prevent movement of soils into waterways will be implemented as needed.

Recommended Wilderness

- Non-electric tools will be used as much as possible to reduce artificial noise.
- Workers will camp at the Akokala Lake campground.
- Administrative helicopter flights will be coordinated with other projects in the area and hauling needs will be combined as possible to minimize administrative flights over recommended wilderness. Construction debris, equipment, and garbage that could not be packed out will be flown out on back-hauls of incoming flights.
- The staging area for helicopter flights will be located outside the North Fork's Wild and Scenic River Corridor.
- Work will be conducted during the late summer/fall (late August-October), after the peak visitation period, to minimize the number of visitors impacted by project activities.

- Logs will be collected well away from the trail, where evidence of their removal is not visible to hikers.
- Once the project is completed, brush, logs, and forest debris will be used to naturalize the immediate work site and the trail to the work site.

Natural Soundscapes

- Non-electric tools will be used as much as possible to reduce artificial noise.

Water Resources

- All equipment will be inspected daily to ensure proper functioning and prevent leaks or fluid spills in the vicinity of the creek and lake. All petroleum products will be properly stored.

Visitor Use and Experience

- Notifications of the proposed project will be posted at Akokala drainage trailheads on the Inside North Fork Road and at Bowman Lake for the duration of the project.
- All overnight visitors will be advised in advance about potential noise and activity in the area.

Alternatives Considered

Two alternatives were evaluated in the EA including the no action alternative and one action alternative. Under Alternative A, No Action, a fish passage barrier will not be constructed. Alternative B, Construct a Fish Passage Barrier on Akokala Creek, is the preferred alternative, as described in the previous section.

The EA also evaluated the following three alternatives that were eliminated from detailed study: 1) construct the barrier at or immediately upstream or downstream of the Akokala Creek Bridge along the Inside North Fork Road, 2) use only non-motorized hand tools and equipment to construct the fish barrier, and 3) transport materials to the work site without helicopter support.

Additionally, one alternative suggested during public review of the EA has also been considered and eliminated from detailed study and is included below:

Build a weir or fish trap at the Akokala Creek Bridge along the Inside North Fork Road. A

weir or fish trap would not be effective in keeping fish out of the stream. Weirs/fish traps can become damaged and ineffective at blocking fish during high water, and are inoperable during high flows due to debris flow and water volume. Under certain conditions, such operations require intensive (sometimes hourly) management. Additionally, such a structure could not be built at the Akokala Creek Bridge due to the broad floodplain and multiple channels, and rainbow trout hybridization is already occurring upstream. This alternative therefore does not meet the purpose and need of the project and has been dismissed from further analysis.

Environmentally Preferable Alternative

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

Alternative B (Construction of a fish barrier on Akokala Creek below Akokala Lake) is the environmentally preferable alternative for several reasons: 1) Native fish populations and native fish habitat in Akokala Lake and the upper Akokala drainage will be protected for the long-term; 2) one of the last remaining adfluvial bull trout populations and one of the last lakes vulnerable to lake trout invasion in the park will be protected for the long term; 3) the long-term persistence of native fish species will help reflect the overall ecological integrity of the Akokala drainage and the park; 4) valuable opportunities for scientific research of an ecologically sound aquatic system will be maintained; 5) outdoor educational opportunities inherent within a unique and increasingly rare aquatic ecosystem will endure for future generations; and 6) backcountry angling opportunities will remain undiminished by significant changes to fish species composition and abundance.

By contrast, Alternative A (No Action) is not the environmentally preferable alternative because, although there will be no activities that will disturb elements of the biological and physical environment, 1) the integrity and persistence of native fish populations in Akokala Lake and upper Akokala Creek will be threatened by non-native fish species accessing the drainage; 2) if lake trout colonize Akokala Lake, the effects to native fisheries (including bull trout, a threatened species) will be adverse, major and long-term; 3) the overall ecological integrity of Akokala Lake, the upper Akokala drainage, and the park as a whole will be diminished; 4) scientific research, outdoor education, and angling opportunities within the Akokala drainage will be permanently compromised.

Why the Selected Action Will Not Have a Significant Effect on the Human Environment

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

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.

Implementation of the preferred (selected) alternative will result in some adverse impacts, especially to recommended wilderness. But the overall long-term benefit of the project, particularly to native fish populations (including the threatened bull trout), outweighs these negative effects. The park has evaluated the trade-offs and determined that the negative impacts to recommended wilderness will not be significant. The severely detrimental effects to native fish populations and bull trout from taking no action could, however, be significant, especially in the face of long-term stressors to native fish from climate change.

The adverse impacts that will occur from the project are summarized as follows: Isolation of the lake and disturbances to the streambed during barrier construction will have short and long-term, site-specific to local, minor adverse impacts to fisheries. The temporary, very localized redirection of some water into the stream channel during high water events will have negligible, adverse, site-specific, and long-term impacts to floodplains. There will be minor, site-specific and local, short and long-term adverse impacts to recommended wilderness (including opportunities for solitude and the undeveloped, untrammelled character) from disturbances during the work period(s), the manipulation of fish passage, and the semi-permanent presence of the structure on the landscape. Minor to moderate, site-specific and local, short-term adverse impacts to natural soundscapes will occur from noise produced by some motorized equipment and tools, and by approximately three anticipated helicopter flights.

The beneficial impacts are summarized as follows: The protection of Akokala Lake's native fish populations for the long term will be the primary benefit of implementing the preferred (selected) alternative. A greatly reduced potential for non-native fish to enter Akokala Lake and harm

native fish populations will have moderate, long-term, site-specific to regional beneficial impacts on native fish populations, including westslope cutthroat trout and the threatened bull trout. There will be moderate, site-specific and local, long-term beneficial impacts to the natural condition and unique ecological, scientific, and educational value of recommended wilderness from the protection of native fish populations.

The degree to which the proposed action affects public health or safety.

There will be no impacts to human health and safety from the selected action; the topic was dismissed from further analysis in the EA.

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.

Akokala Lake is an ecologically critical area that supports native fish species, including westslope cutthroat trout and a genetically distinct population of adfluvial bull trout. Genetic testing suggests that genetically pure westslope cutthroat trout exist in the upper and lower Akokala drainage. The lake is also one of the last bull trout supporting lakes on the west side of the park that is vulnerable to lake trout invasion but has not yet been invaded, a status that is rare throughout the Flathead River drainage. Akokala Lake's ecological value will become increasingly critical as it provides important habitat refugia for native fish species faced with the challenges of a changing climate. The Akokala drainage also provides habitat for wildlife, including the threatened grizzly bear and a number of state-listed bird and mammalian species of concern. Effects to fisheries are previously described under *Impacts that may be both beneficial and adverse*; barrier construction and future maintenance will have adverse impacts that are minor or less to wildlife, grizzly bears, and state-listed species of concern.

Akokala Lake is located within recommended wilderness. The Akokala drainage is untrammeled, characterized by rugged, remote, wild country, and spectacular scenery. Development is limited to hiking trails and a backcountry campground, and the lake provides opportunities for solitude and primitive recreation, such as hiking and backcountry camping. The soundscape is generally characterized by natural sounds. The wilderness resource in the Akokala drainage also offers unique opportunities for outdoor education and important opportunities for scientific research on intact terrestrial and aquatic ecological systems. Effects to recommended wilderness and natural soundscapes are previously described under *Impacts that may be both beneficial and adverse*. There will be minor and short-term adverse impacts to visitor use and experience during barrier construction.

There are no historic buildings and structures or cultural landscapes in the project area, and no identified archeological resources. There are also no wetlands, farmlands, or wild and scenic rivers within the geographic area.

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

Eleven comment letters were received during scoping. Six letters were from private individuals, three letters were from organizations, one letter was from the Army Corps of Engineers, and one was from the Montana Department of Environmental Quality. Eight letters were supportive of the proposal to construct a fish passage barrier and none were opposed. Scoping comments were addressed in the EA.

Twelve letters were received during the EA public review period. Nine letters expressed support and one expressed opposition. The remaining two letters pertained to consultation and permits.

The opposing letter centered on impacts to recommended wilderness, disagreed with some of the EA's characterizations of beneficial impacts, questioned some information in the EA and portions of the analysis, and was of the opinion that the project is not allowed by the Wilderness Act and requires an EIS. The NPS disagrees with this opinion for the reasons stated in the *Responses to Comments* section of the Errata Sheets attached to this FONSI. The project is not a major federal action and will not result in significant impacts. Therefore, while there is a differing opinion, the project does not require an EIS.

A total of 27 comments are considered substantive or warranted a response and are addressed in the attached Errata Sheets. Minor text changes have been made, but there have been no changes to the impact determinations as stated in the EA. The project is not controversial because few (twelve) comment letters were received and most were favorable, with only one letter expressing opposition.

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

Fish passage barriers are being widely employed as a management strategy to conserve native fish across the nation, including within the NPS (at Crater Lake National Park and Yellowstone National Park, for example). Glacier National Park completed the construction of a fish passage barrier on Quartz Creek in 2012. There are therefore no highly uncertain effects or unique or unknown risks associated with constructing a barrier on Akokala Creek, and the environmental process has not identified any such effects or risks.

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.

Glacier National Park completed the construction of a fish passage barrier on Quartz Creek in 2012. Therefore, the construction of a fish passage barrier at Akokala Lake does not establish a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.

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.

Cumulative effects were analyzed in the EA and no significant cumulative impacts were identified.

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.

The project is located in an undeveloped area of the park. No historic buildings and structures or cultural landscapes are in the project area. The area of potential effect has been surveyed; no identified and/or unevaluated historic properties exist, and the probability of discovering historic properties within the area of potential effect is highly unlikely. No archeological resources were identified in the area of potential effect or in adjacent areas during a survey conducted on October 30, 2013 (Rowley 2013). The park has reached a finding of "no adverse effect" under Section 106 of the National Historic Preservation Act; the Montana State Historic Preservation Office (SHPO) concurred with this finding on June 9, 2014.

Neither the Blackfoot Tribe nor the Confederated Salish and Kootenai Tribes raised concerns about the project.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

There are no recorded observations of the threatened Spalding's catchfly or the threatened water howellia in the project area, nor is suitable habitat that could potentially support the species known to be present; there will therefore be no impacts to Spalding's catchfly or water howellia from the project. Grizzly bears travelling near the project area could be temporarily disturbed or displaced by noise and human activity during construction of the fish barrier. Due to the short duration and low intensity of the project, impacts to grizzly bears will be minor. Canada lynx habitat within the Akokala drainage is not optimal and park files contain only one record of lynx tracks in the area. If lynx are present, they will not be measurably affected given the short duration and localized nature of the work; impacts to lynx will be negligible or less. Park files contain one record of a wolverine sighting in the Akokala drainage; wolverines likely only use the area sporadically and will not be measurably affected. There will be minor, adverse, short and long-term and site-specific to local impacts to bull trout from isolation of the lake and disturbances to the stream bed during barrier construction. There will also be moderate, long-term, site-specific to regional beneficial impacts to bull trout from the greatly reduced potential for non-native fish to enter Akokala Lake.

The Section 7 determinations of effects are "no effect" for water howellia, Spalding's catchfly, and Canada lynx; "not likely to jeopardize" for wolverine; and "may affect, not likely to adversely affect" for grizzly bears and bull trout. In accordance with Section 7 of the Endangered Species Act, Glacier National Park initiated informal consultation with the USFWS on August 3, 2012. On June 6, 2014 the park submitted two biological assessments to the USFWS addressing separately the effects to grizzly bears and bull trout. The USFWS concurred with the effects determinations in a letter dated July 2, 2014.

State listed bird species of concern will not be measurably impacted since the work will occur after the nesting period and after most birds have migrated from the area. The barrier will not be constructed in a boggy area that could be occupied by northern bog lemmings, nor will it change the course of the stream and alter bog lemming habitat nearby. Fishers have not been recently detected in the park and may not be present; if fishers do use the project area, they will not be measurably affected since the project will occur outside the fisher denning period. Bat species of concern will be moving into subterranean hibernacula by the time the project is underway and will not likely be using habitat in the vicinity of the project area. The hoary bat could be found in the habitat type characterizing the project area (MNHP 2011), but the majority of the work will be localized to a very small area, the probability that bat roosting habitat will be measurably affected is low, and bats will not likely be much affected if temporarily displaced; adverse impacts to bats will be negligible to minor. Given the localized nature of the project, the proposed action will not measurably impact any known local amphibian populations or their habitat; any amphibians encountered will be moved out of the immediate work area. Information on state listed species of concern was provided by the Montana Natural Heritage Program (MNHP) in a report dated October 29, 2013.

Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The action will not violate any federal, state, or local laws or environmental protection laws.

Public Involvement and Native American Consultation

The EA was made available for public review and comment during a 30-day period ending July 7, 2014. A press release was distributed to several media outlets and a letter announcing the availability of the EA was mailed to individuals and organizations on the park's EA mailing list, including members of Congress and various federal, state, and local agencies. Hard copies of the EA were also mailed to several individuals. An email announcement was sent to a number of interested parties with a link to the EA on the NPS Planning, Environment, and Public Comment (PEPC) website. Glacier National Park notified the Confederated Salish and Kootenai Tribes and the Blackfeet Tribal Business Council as required by 36 CFR 800. No letters or emails were received from the tribes.

The park received twelve letters during the EA public review period. Nine letters expressed support and one expressed opposition. The remaining two letters pertained to consultation and permits. Letters were received from the Montana Department of Environmental Quality; Montana Fish, Wildlife, and Parks; the USFWS; the Office of the Minister of Environment and Sustainable Resource Development, Alberta, Canada; the Flathead Valley Chapter of Trout Unlimited; the National Parks Conservation Association; and Wilderness Watch. Of the organizations listed, Wilderness Watch opposed the project and the USFWS, Montana Fish, Wildlife and Parks, the Alberta Office of the Minister of Environment and Sustainable Resource Development, Trout Unlimited, and the National Parks Conservation Association were supportive; several of these organizations provided comments that have been addressed under Responses to Comments in the Errata Sheets.

Opposing comments from Wilderness Watch centered on impacts to recommended wilderness, disagreed with some of the EA's characterizations of beneficial impacts, questioned some information in the EA and portions of the analysis, and was of the opinion that the project is not allowed by the Wilderness Act and requires an EIS.

Supporters of the project cited the importance of protecting native species, the detrimental effects of non-native invasive species, the threats to native fish from climate change, and the value of the Akokala Lake drainage to native fish. Supporters also offered suggestions pertaining to staging materials and supplies, equipment inspection and storage, project scheduling, and educational information about the project, and stated the need for a long-term fisheries management plan.

Comments are addressed in the Errata Sheets attached to this FONSI. The FONSI and Errata Sheets will be sent to all commenters, and the FONSI will be made available to the public on PEPC.

Conclusion

As described above, the preferred alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with adverse and beneficial impacts that range from negligible to moderate, short to long-term, and site-specific to regional. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, the NPS has determined that an EIS is not required for this project and thus will not be prepared.

Approved:

Sue E. Masica
Sue E. Masica
Director, Intermountain Region, National Park Service

9/5/14
Date

Errata Sheets

Akokala Creek Fish Passage Barrier

Glacier National Park

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal.

A total of 27 comments in 4 of the 12 letters received during public review of the EA were considered substantive or warranted a response. Some substantive comments have resulted in changes to the text of the EA, in which case they are addressed in the *Text Changes* section of these Errata Sheets. Substantive comments that required a more thorough response are addressed in the *Responses to Comments* section.

TEXT CHANGES

Five text changes have been made to the EA in response to comments about the project. Italicized and underlined text indicates the section in the EA that has been altered. Strike-out is used to show text that has been stricken; bold text is used to show new text.

p. 3, paragraph 1, Background under Purpose and Need. Rainbow trout are invading North Fork of the Flathead tributaries both within and outside the park and threaten westslope cutthroat trout populations with competition and hybridization. In the past few years, a westslope cutthroat-rainbow trout hybrid was documented migrating into Akokala Creek during springtime (presumably to spawn) and genetic testing **in 2008 and 2009** of juvenile westslope cutthroat trout in lower Akokala Creek ~~has shown~~ **showed** that westslope cutthroat-rainbow trout hybridization **is was** beginning to occur in the **lower part of the** drainage. **The hybrids appeared to be recent immigrants; this combined with the rate at which hybridization typically spreads likely means that hybridization has not yet occurred in the upper part of the creek.**

p. 26, insert new item under Mitigation Measures: ***Water Resources. All equipment would be inspected daily to ensure proper functioning and prevent leaks or fluid spills in the vicinity of the creek and lake. All petroleum products would be properly stored.***

p. 27, add new paragraph under Alternatives Considered but Eliminated from Detailed Study: ***Build a weir or fish trap at the Akokala Creek Bridge along the Inside North Fork Road. A weir or fish trap would not be effective in keeping fish out of the stream. Weirs/fish traps can become damaged and ineffective at blocking fish during high water, and are inoperable during high flows due to debris flow and water volume. Under certain conditions, such operations require intensive (sometimes hourly) management. Additionally, such a structure could not be built at the Akokala Creek Bridge due to the broad floodplain and multiple channels, and rainbow trout hybridization is already occurring upstream. This alternative therefore does not meet the purpose and need of the project and has been dismissed from further analysis.***

p. 35, addition to Future Actions under Cumulative Impact Scenario: ***The park anticipates the preparation of a fisheries management plan and environmental impact statement (EIS) in the near future in order to develop a comprehensive, park-wide strategy to conserve native fisheries.***

p. 53, insert to paragraph 3, Conclusion, Impacts of Alternative B (preferred) under Recommended Wilderness: **Adverse impacts to recommended wilderness would not change the fundamental character and values that qualify the project area for inclusion in the park's wilderness recommendation.**

RESPONSES TO COMMENTS

1. **Comment:** "The wilderness analysis is deeply flawed. It assumes that an action benefiting a native species even when the action involves the use of motorized equipment and creation of a permanent structure is more important than preserving the area's wildness. While lake trout and rainbow trout are unnatural in this area, their existence in the North Fork Flathead system is not an overt trammeling of the wilderness as the proposed barrier would be... In sum, the project violates the basic premise of wilderness as a self-willed landscape."

Response: We disagree. Wilderness is not exclusively characterized by the Wilderness Act as a "self-willed landscape". The defining attributes of wilderness as described in Section 2(c) of the Wilderness Act include not only "untrammeled", but also "protected and managed so as to preserve its natural conditions and which... may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." The NPS recognizes that the barrier will adversely affect the untrammeled quality of recommended wilderness. These impacts will, however, not be unacceptable. The NPS has determined that the risk to native fish populations and the ecological condition of recommended wilderness in the Akokala drainage from non-native invasive fish is unacceptable, and that the adverse effects to recommended wilderness from non-native invasive fish would be greater in degree and intensity than those that will occur from the project.

2. **Comment:** "The Wilderness Act does not allow this of activity, regardless of how well intended it may be. Rather, this action strikes at the very heart of wilderness as an area without permanent structures, motorization, and an area untrammeled or self-willed."

Response: We disagree. The Wilderness Act prohibits certain uses "except as necessary to meet minimum requirements for the administration of the area for the purposes of this Act" [Section 4(c).] In accordance with the minimum requirements concept, Director's Order 41, and Section 6.3.5 of the NPS Management Policies, the NPS completed a Minimum Requirement Analysis, which was attached to the EA as Appendix A. Section 6.3.4.3 of the NPS Management Policies also guided our analysis and decision process. Through the Minimum Requirement Analysis, the park determined that the project is necessary to preserve the natural quality of wilderness character and unique ecological, scientific, and educational values. Additionally, the analysis determined that the project is necessary to meet requirements of other federal laws, specifically the Endangered Species Act and the NPS Organic Act. Furthermore, the Wilderness Act does not "modify the statutory authority under which units of the national park system are created", nor "lower the standards evolved for the use and preservation" of a park [Section 4(a)(3)]. The NPS has the statutory authority and responsibility to conserve species listed under the Endangered Species Act [Section 7(a)(1)], Executive Order 13112 (Invasive Species) requires federal agencies to control invasive species populations and "provide for restoration of native species and habitat conditions", and

the NPS Organic Act and Glacier National Park's enabling legislation require the preservation of native species in an unimpaired condition for future generations.

- 3. Comment:** "The agencies do not have the authority to purposely develop wilderness by this kind of activity."

Response: *The NPS has the authority to undertake the project. Section 4(a) of the Wilderness Act states the following: "The purposes of this Act are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and wildlife refuge systems are established and administered". In specific reference to wilderness within the national park system, Section 4 (a) (3) of the Act holds that a wilderness designation of lands within a national park "shall in no manner lower the standards evolved for the use and preservation of such park". (See also response to Comment 2).*

The park has a statutory obligation to restore and protect threatened bull trout populations under the Endangered Species Act [Section 7(a)(1)], and the NPS Organic Act of 1916, which directs the agency to "conserve the scenery and the natural and historic objects and the wild life therein" and to "leave them unimpaired" for future generations. Additionally, Executive Order 13112 (Invasive Species) orders federal agencies to control invasive species populations and "provide for restoration of native species and habitat conditions". Through its enabling legislation, Glacier National Park was established in part to "provide for the preservation of the park in a state of nature so far as is consistent with the purposes of this act, and for the care and protection of the fish and game within the boundaries thereof". The laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

NPS Management Policies guide and regulate how the NPS carries out its authority and obligations under the laws. Section 4.1 of the 2006 NPS Management Policies states that: "Biological or physical processes altered in the past by human activities may need to be actively managed to restore them to a natural condition or to maintain the closest approximation of the natural condition when a truly natural system is no longer attainable."

Section 4.1.5 states: "The Service will use the best available technology, within available resources, to restore the biological and physical components of these [natural] systems, accelerating both their recovery and the recovery of landscape and biological community structure and function..."

Section 4.4.1.1 states: "To meet its commitments for maintaining native species in parks, the Service will cooperate with states, tribal governments, the U. S. Fish and Wildlife Service, NOAA Fisheries, and other countries, as appropriate, to

- ... prevent the introduction of exotic species into units of the national park system, and remove, when possible, or otherwise contain individuals or populations of these species that have already become established in parks."*

Section 4.4.2 states: "The Service may intervene to manage populations or individuals of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them... Management is necessary... to protect rare, threatened, or endangered species; ..."

In particular, Section 4.4.2.3 of the Policies states: "The Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act. The Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these species. To meet these obligations, the Service will

- ... undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats; control detrimental nonnative species; manage detrimental visitor access; and reestablish extirpated populations as necessary to maintain the species and the habitats upon which they depend; ..."*

Section 4.4.4 states: "Exotic species will not be allowed to displace native species if displacement can be prevented," and Section 4.4.4.2 states: "All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed—up to and including eradication—if (1) control is prudent and feasible, and (2) the exotic species

- interferes with natural processes and the perpetuation of natural features, native species or natural habitats, or*
- disrupts the genetic integrity of native species,...*

High priority will be given to managing exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controlled. ..."

Additionally, Section 6 of the NPS Policies provides guidance on wilderness management and states: "Management should seek to sustain the natural distribution, numbers, population composition, and interaction of indigenous species. Management intervention should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use, and influences originating outside of wilderness boundaries.

Management actions, including the restoration of extirpated native species, the alteration of natural fire regimes, the control of invasive alien species, the management of endangered species, and the protection of air and water quality, should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals" (Section 6.3.7).

- 4. Comment:** "The structure would, at the very least, be a long-term dam."

Response: *The fish barrier will not be a dam. Dams are constructed to block downstream flows and form upstream reservoirs or pools. The fish barrier will not block downstream flows nor will it result in the formation of an upstream reservoir. As stated on p. 18 of the EA: "The barrier would force much of the flow into the middle of the channel and over the center of the structure, thereby serving as a velocity and height barrier for fish attempting to migrate upstream. The barrier would not impede downstream movements of native fish."*

- 5. Comment:** "The argument that this will benefit wilderness is flawed. The EA suggests that overt trammeling will be minimal because the motorized use would only take place for construction of the project, and the structure would be "semi-permanent" (a disingenuous statement given the concrete dam pictures as a possible design and the fact the agency will want such a structure in perpetuity... The question [that] needs to be

addressed is where in the Wilderness Act is this kind of perpetual trammeling valued above the untrammeled nature or process of wilderness?"

Response: *The EA acknowledges both beneficial and negative impacts to recommended wilderness. The benefits to the natural conditions and unique ecological, scientific, and educational value of recommended wilderness will outweigh the negative impacts to other wilderness defining attributes, including the untrammeled quality. The purpose of the project includes the conservation of the park's recommended wilderness through the preservation of natural, ecological conditions. See p. 4 of the EA under Purpose and Need, 5th bulleted item. See also the response to Comment 1.*

6. **Comment:** "This project is not minor. Any new structure, which permanently affects free flow of processes (in this case aquatic organisms, natural or not) and motorized intrusion in wilderness, seriously and permanently damages the wilderness."

Response: *We disagree. Please see the EA, pp. 52-53.*

7. **Comment:** "One example of how misguided the Minimum Requirements Decision Guide (MRDG) is regards angling. It suggests westslope trout are needed to provide wilderness angling opportunities and that angling for fish, which are not genetically pure, is somehow different. Such an assertion is absurd. Besides, angling is not a wilderness dependent activity. It is allowed in wilderness, often including wildernesses that are also within the national park system, but it is not wilderness dependent."

Response: *We agree that angling is not wilderness dependent. Angling is not among the project objectives listed in the EA (see Purpose and Need, p. 4). The EA and MRDG acknowledge the benefit to anglers as a result of the project.*

8. **Comment:** "The EA downplays the problems of both manipulating the wilderness, in perpetuity through the use of a dam, and of using motorized equipment, including helicopters to build and possibly periodically maintain the dam. While lake and rainbow trout may not be desirable in Glacier National Park, the Wilderness Act does not prohibit their presence. The same can't be said for the use of helicopters, other motorized equipment, and the construction of a dam/barrier."

Response: *We disagree with the assertion that the EA downplays the effects of manipulation and motorized use. The EA analyzes the impacts to recommended wilderness on pp. 52-53, and includes adverse impacts to the untrammeled and undeveloped quality as well as opportunities for solitude. The MRDG (Appendix A) also acknowledges these impacts.*

The EA was a process of evaluating the trade-offs of impacting certain resources and wilderness values for the benefit of other resources and wilderness values. The park is aware that selection of the preferred alternative will negatively affect important wilderness values (such as untrammeled, undeveloped, and opportunities for solitude) near Akokala Lake. The negative impacts to recommended wilderness and other resources will not, however, be unacceptable nor result in the near total loss of that value or resource. They are the inevitable consequence of preserving the native aquatic ecosystem at Akokala Lake from the severely detrimental, unacceptable effects of non-native invasive fish species. The importance of protecting aquatic ecosystems in the park becomes even more urgent when considering the consequences of climate change. The park's high elevation watersheds will provide important refugia for bull trout and other native fish faced with the stressors of climate change. Ensuring the availability of habitat that is free of lake trout will be essential in maintaining this safeguard.

See also responses to Comments 2, 3, and 4.

9. **Comment:** "For the reasons examined below, one should reject the premise that the Wilderness Act can be interpreted where untrammeled wildness is co-equal with naturalness and that these two alleged key components of wilderness character are increasingly in conflict. Neither rules of statutory construction nor the history of the Act permit such an interpretation.

The laws of statutory construction are clear that reading a law should not put portions of the law in conflict. McCloskey (McCloskey, 1999) notes:

The section referring to natural conditions follows the key initial point about it being untrammeled. . . Any meaning given to the phrase "natural conditions" should be consistent with the key idea of not "trammeling" these areas. This interpretation is favored because this language comes first and, in accordance with rule of statutory construction, it avoids any unnecessary implication of conflict between the provisions... Thus, the community of life in wilderness should not be subdued, or put under domination of man.

Thus, natural conditions, as used in the Wilderness Act, are the result of untrammeled wilderness and not some point in time. As Bill Worf suggests, a drip torch (or one could add a fish barrier) are just as damaging to wilderness as a bulldozer. (Worf 1997). In Wilderness, we let nature roll the dice, even if we believe the dice have been loaded."

Response: *In Wilderness Society v. USFWS, 353 F.3d 1051 (9th Cir. 2003), the Court reiterated the canons of judicial construction, noting that the words of a statute "must be read in their context and with a view to their place in the overall statutory scheme."*

Statutory terms may be read "in light of the purpose of the statute. Thus, the structure and purpose of a statute may also provide guidance in determining the plain meaning of its provisions."

In considering the purpose of the Wilderness Act, the Court highlighted the Act's declaration of policy, which states as a goal the "'preservation and protection' of wilderness lands 'in their natural condition,' so as to 'leave them unimpaired for future use and enjoyment as wilderness and so as to provide for the protection of these areas, [and] the preservation of their wilderness character.' 16 U.S.C. [section] 1131(a). The Wilderness Act further defines 'wilderness,' in part, as 'an area where the earth and its community of life are untrammeled by man.' Id. [section] 1131(c)." Thus the Act's broad mandate is 'to protect the forests, waters, and creatures of the wilderness in their natural, untrammeled state.'

Thus, it seems that any obligation to preserve the "naturalness" of forests, waters, and creatures in recommended wilderness must be carried out to preserve the "wilderness character" of an area, e.g., untrammeled by man, and designed to advance purposes of the Wilderness Act, e.g., unimpaired for future use and enjoyment as recommended wilderness. This project seeks to preserve native species, habitat, and ecological conditions within recommended wilderness toward the preservation of wilderness character, so as to leave the area unimpaired for future use and enjoyment.

10. **Comment:** "One other problem should be noted. A reason given for not constructing a barrier outside of the recommended wilderness is that it would likely be within designated wild and scenic river corridor of the North Fork Flathead. This section is not a wild river, it has road along it. Thus, it falls under the less restrictive provisions for scenic and recreational rivers. It is indeed ironic the Park Service would elevate the Wild and Scenic Rivers Act above the Wilderness Act even when there would be no violation of

the Wild and Scenic Rivers Act from the original proposed action. This kind of arbitrary and capricious analysis not only denigrates wilderness, it violates NEPA."

Response: *The EA does not "elevate" the Wild and Scenic Rivers Act above the Wilderness Act. Encroachment on the Wild and Scenic River Corridor is only one of several reasons why constructing the barrier at or near the Akokala Creek Bridge along the Inside North Fork Road was dismissed from the analysis (see pp. 26-27 of the EA). A barrier at this location would not meet the purpose and need of the project.*

- 11. Comment:** "The purpose and need for the project is not demonstrated. The EA admits that Akokala Lake is not good habitat for lake trout. Given that, why is this project even being considered? The main concern seems to be bull trout, with westslope cutthroat an afterthought."

Response: *We disagree; the purpose and need for the project, including concerns pertaining to westslope cutthroat trout, are well articulated on pp. 1-4 of the EA. As stated on p. 3, habitat in Akokala Lake may be marginal for the establishment of a lake trout population, but the presence of lake trout migrating up the drainage could impact the lake's small, genetically distinct bull trout population.*

- 12. Comment:** "While the EA expresses major concern over bull trout, as an afterthought, it expresses concern over westslope cutthroat hybridization with rainbow trout. The EA does not give a background into the "recent" concern over rainbow/westslope hybrids, but suggests that one recently was observed in the creek. The genetic data from 2008 suggests the upper part of the creek does not have hybrids. How does the agency know that hybridization hasn't already occurred? Besides, native redband trout (the same species as rainbow trout), which occur to the west of Glacier National Park in the Kootenai River system, do hybridize naturally with westslope cutthroat."

Response: *In addition to the 2008 data, sample data from 2009 indicated hybridization between westslope cutthroat trout and rainbow trout in the lower reaches of the creek. The hybrids appeared to be recent immigrants. This combined with the rate at which hybridization typically spreads supports our professional judgment that hybridization has not likely yet occurred in the upper part of the creek. If hybridization in the upper part of the creek has occurred since 2008, the barrier will curtail its expansion by preventing additional hybrids from reaching the lake. A text change has been made to p. 3 of the EA for clarification (please see Text Changes).*

Rainbow trout are not native to the Flathead River and have been shown to cause fitness declines in westslope cutthroat trout following hybridization (Muhlfeld et al. 2009).

- 13. Comment:** "The EA does not analyze other actions, including the original proposed action, which would have built a structure outside of the recommended wilderness. Rather than the structure as originally proposed, which the EA claims would be difficult to build, a weir, fish trap or other structure could have been analyzed in the same place. The EA does not have an adequate range of alternatives."

Response: *We disagree with the assertion that the EA does not have an adequate range of alternatives. The EA analyzed a full range of alternatives. The NPS initially considered additional alternatives and dismissed them because they didn't meet the purpose and need of the project and/or would result in unacceptable impacts to park resources.*

A weir or fish trap at the Akokala Bridge would not be effective in keeping fish out of the stream. Weirs/fish traps can become damaged and ineffective at blocking fish during high water, and are inoperable during high flows due to debris flow and water volume. Under certain conditions, such operations require intensive (sometimes hourly) management. Additionally, such a structure could not be built at the Akokala Creek Bridge due to the broad floodplain and multiple channels, and rainbow trout hybridization is already occurring upstream. A weir or fish trap at the Akokala Creek Bridge would therefore not meet the purpose and need of the project. See also Text Changes, p. 27, Alternatives Considered by Eliminated from Detailed Study.

- 14. Comment:** "Furthermore, the only action alternative is not very detailed. The dam structure could be built with logs or cement (or both). The location could be in a couple of different spots. Thus, the EA fails NEPA's requirements for a site-specific analysis of impacts."

***Response:** The barrier will not be a "dam" (see response to Comment 4). The EA states that concrete may be used in addition to logs and rock; impacts to park resources will be the same whether or not concrete is used, and whether the barrier is located at either of the identified locations. The analysis considered site-specific impacts to park resources. The EA was prepared in accordance with the Council on Environmental Quality regulations for implementing NEPA.*

- 15. Comment:** "...the EA should have addressed the impact on the NPS' wilderness recommendation for Glacier National Park. Clearly this project, as well as the one at Quartz Lake, set the administration of the area on a path in conflict with long-term administration of the area as Wilderness. The EA should have informed the public of the long-term consequences of the proposed action."

***Response:** The project will not change the fundamental character and values that qualify the project area for inclusion in the park's wilderness recommendation. Additionally, Section 6.2.1.2 of the 2006 NPS Management Policies state: "An area will not be excluded from a determination of wilderness eligibility solely because established or proposed management practices require the use of tools, equipment, or structures if those practices are necessary to meet minimum requirements for the administration of the area as wilderness," and "Overflights do not make an area ineligible for wilderness designation." Text stating that the project will not affect Glacier National Park's wilderness recommendation has been added to the conclusion of the impacts analysis for recommended wilderness; see Text Changes, p. 53.*

- 16. Comment:** "The EA downplays impacts to wilderness character, suggesting that the structure would not be visible to most backcountry users and the motorized construction would take place when visitor use is light to non-existent. That reasoning is seriously flawed. Solitude would be as greatly, if not more greatly affected, in areas when the use is light. Those who visit an area in the off-season do so to avoid crowds and find solitude. The idea behind prohibiting both structures and motorized use is that it, on the face of it, they are incompatible with wilderness and wilderness character. The violation of wilderness by the construction of a structure by the use of motorized equipment-a structure not needed for the singular purpose of wilderness preservation- occurs whether there are no visitors or many visitors to the area in question. The analysis seems to miss this point entirely."

Response: *We disagree. The EA acknowledges that the project will have adverse impacts to visitor use and experience (p. 16), opportunities for solitude within recommended wilderness (pp. 52-53), and natural soundscapes (pp. 55-56). The fish barrier is needed for the preservation of native species and ecological conditions within recommended wilderness. See also responses to Comments 1, 5 and 8.*

- 17. Comment:** "The EA also fails to look at a comprehensive program of bull trout recovery in Glacier National Park. Without knowing where else bull trout populations are found in Glacier National Park lakes, and what the agency *ahs* [sic] planned, it is impossible to tell whether this program makes any sense at all, let alone whether it meets any test of section 4(c) of the Wilderness Act. Also, given the permanent structure and use of motorized equipment, this project would have a significant impact on the wilderness. Clearly, an EA is inadequate and an EIS is needed, preferably a comprehensive EIS that looks at the entire program. The current EA fails the test of cumulative impacts on wilderness from this program."

Response: *See the Purpose and Need section of the EA, pp. 1-4, for a discussion on the status of bull trout in the park and why the fish barrier is necessary for the conservation of bull trout and other native fish.*

We disagree with the assertion that the project requires an EIS. The impacts from this project were determined not to be major and/or significant and therefore an EIS is not required.

The park plans to prepare a comprehensive fisheries management plan and EIS in the very near future to evaluate long-term fish management throughout the park. See also Text Changes, p. 35 of the EA.

- 18. Comment:** "The agency engages in [sic] faulty logic in examining the alternatives. What it attempts to do is replace the law's clear mandates to protect wilderness character by elevating specific characteristics of wilderness above wilderness character itself.

For example, the MRDG alleges not building a barrier/dam would have negative impacts on the undeveloped character of the recommended wilderness. This is illogical and just the opposite of what would occur. This turns the Wilderness Act on its head."

Response: *The MRDG states that no action could indirectly affect the undeveloped quality of recommended wilderness if non-native invasive lake trout enter Akokala Lake and later result in the need for motorized gill netting and removal operations, which would be more disruptive to wilderness character than the barrier (see MRDG, Appendix A of the EA).*

- 19. Comment:** "Using economy and efficiency as measures, which the Park Service has apparently set up to favor motorization, also flies in the face of Wilderness. Ironically, under this logic, the no-action alternative should score higher on the economy measure than the other two alternatives considered in the MRDG, because it uses no resources. Wouldn't that be the most economical? However, it scores the lowest."

Response: *Economy and efficiency are addressed as but one component of the MRDG process. As stated in the MRDG, no action would allow non-native invasive lake trout to enter Akokala Lake, which could result in costly and time consuming gill netting and removal operations.*

- 20. Comment:** "This project has a significant negative impact on the recommended wilderness. It overtly trammels wilderness, likely into perpetuity. The actions have a greater impact on wilderness than does the unfortunate and ongoing replacement of one species of *Salvelinus* by another or the hybridization of two species of *Oncorhynchus*, which occurs naturally in places that have both red band (rainbow) and westslope cutthroat trout."

Response: *We disagree; see responses to Comments 1, 5, 8, 9, 16, and 17.*

- 21. Comment:** Would fish, whether native or non-native, be harmed in any way?

Response: *Lethal removal of fish is not planned as part of this project. This project only involves the construction of the barrier.*

- 22. Comment:** "Preferably [build the barrier] in a way that can be removed in the future if it proves to cause environmental problems."

Response: *The barrier will be removable and can be removed if necessary.*

- 23. Comment:** "First, before preparation and construction begin, a formal plan should be in place for efficiently staging materials and building supplies so that any mechanized tools (chainsaw, rock drill, generator, etc.) are used for as short of time as possible. For instance, locate and identify all trees needed to build the barrier before project implementation. Or, if the rock drill proves necessary, identify the number and the locations of drill holes in advance."

Response: *Staging will be part of the project and we will minimize the use of mechanized tools.*

- 24. Comment:** "As part of plan implementation, NPS also should require daily checks of all tools/generators, to ensure proper functioning of the tools and to minimize the chance of fluid spills around the creek/lake. In addition, plan implementation should including [sic] proper storage of any fuels/oils necessary for the operation."

Response: *Thank you for the suggestion. These measures have been added as a text change to the EA under Mitigation Measures (see Text Changes, p. 26).*

- 25. Comment:** "We also suggest beginning this project as late in the year as possible, not only to take advantage of lower water levels in the creek, but also to minimize the impact on visitors to the park. This start date, however, should be set following analysis of native trout seasonal migration and spawning cycles, to avoid unnecessary impacts on the fishery. We believe that balancing the needs of native wildlife with visitor experience is important so to the extent possible avoiding high visitor season (July-August) is key."

Response: *Construction of the barrier is anticipated to begin in late August, when water flow is low and after the peak visitor use period. This timing will allow the project to avoid impacting spawning activity and incubation of cutthroat trout eggs, which occurs in the spring and early summer. Bull trout spawning is underway in September and October, but we do not anticipate this to be occurring in the project area due to the steep channel gradient and large stream substrates.*

- 26. Comment:** "As part of the mitigation measures, NPS proposes to post notices of work on the fish barrier at local trailheads. We believe park managers should take that a step further, and post educational materials at the trailheads to explain why the work is being

done, the need to protect native species and the threat that aquatic invasive species pose.”

Response: *Thank you for the suggestion; it will be included in the project.*

- 27. Comment:** “Finally, we still believe that the Park needs a coordinated and long-term plan for protecting and restoring native fish species (Bull Trout and Westslope Cutthroat Trout). This should be prepared and implemented in concert with other managing agencies, and should include actions such as building fish barriers, lake trout suppression on Quartz, Logging Lakes and other relevant lakes, lake trout removal in Flathead Lake, and other ongoing and future actions to maintain and enhance native fish species. A watershed-wide plan that is coordinated among all managing agencies and tribal governments will aid in planning future projects, and should focus on key lakes, streams and tributaries that are important for native bull and westslope cutthroat trout. It will also aid in the study of effectiveness for different actions taken, and allow for more flexible management and rapid adaptive management if activities are found to be ineffective.”

Response: *See response to Comment 17 and Text Changes to p. 35 of the EA.*

References

- Downs, C.C., C. Stafford, H. Langner, and C.C. Muhlfeld. 2011. Glacier National Park Fisheries Inventory and Monitoring Bi-Annual Report, 2009-2010. National Park Service, Glacier National Park, West Glacier, Montana.
- Fredenberg, W. 2003. Further evidence that lake trout displace bull trout in mountain lakes. *Intermountain Journal of Sciences* 8(3):1-11.
- Fredenberg, W., M. Meeuwig, and C. Guy. 2007. Action Plan to Conserve Bull Trout in Glacier National Park. USFWS Creston Fish and Wildlife Center, Kalispell, Montana.
- Montana Natural Heritage Program (MNHP). 2011. Montana Field Guide. Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. Retrieved on January 12, 2012, from http://fieldguide.mt.gov/detail_AMACC05030.aspx.
- Muhlfeld, C.C. and 7 co-authors. 2009. Hybridization rapidly reduces fitness of a native trout in the wild. *Biology Letters* 5:328-331.
- Muhlfeld, C. C., R. P. Kovach, L. A. Jones, R. Al-Chokhachy, M. C. Boyer, R. F. Leary, W. H. Lowe, G. Luikart, and F. W. Allendorf. 2014. Invasive hybridization in a threatened species is accelerated by climate change. *Nature Climate Change, Letters*. Published online: 25 May 2014. DOI: 10.1038/NCLIMATE2252.
- Rowley, B. 2013. Akokala Creek fish barrier archeological project report. Glacier National Park, West Glacier, Montana.
- Williams, J. E., A. L. Haak, H.N. Neville, and W.T. Colyer. 2009. Potential consequences of climate change to persistence of cutthroat trout populations. *North American Journal of Fisheries Management* 29: 533-548, American Fisheries Society.

Appendix: Non-Impairment Finding

National Park Service's *Management Policies, 2006* require analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relates back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include fisheries, floodplains, recommended wilderness, and natural soundscapes.

Fundamental resources and values for Glacier National Park are discussed in the 1999 *General Management Plan*. All of the impact topics carried forward in this EA are necessary to fulfill specific purposes identified in the establishing legislation of the park; are key to the natural or cultural integrity of the park; and/or are identified in the park's general management plan or other relevant NPS planning document.

- **Fisheries** – the fish passage barrier will have minor adverse impacts to fisheries from the isolation of Akokala Lake and disturbances to the streambed during construction. But the moderate beneficial impacts to native fish populations from the greatly reduced potential for non-native fish to enter Akokala Lake will outweigh the adverse impacts. Although fisheries are a fundamental resource at the park, the preferred alternative will only result in minor, site-specific to local, short and long-term adverse impacts to fisheries, including bull trout and westslope cutthroat trout; therefore, there will be no impairment to fisheries.
- **Floodplains** – the fish passage barrier will have negligible adverse impacts to floodplains from the very localized redirection of some water into the channel during high water events. Although floodplains are a fundamental resource at the park; the preferred alternative will only result in negligible, site-specific, long-term adverse impacts to floodplains; therefore, there will be no impairment to floodplains.
- **Recommended Wilderness** – the fish passage barrier will have minor adverse impacts to opportunities for solitude and the undeveloped, untrammeled character of recommended wilderness from disturbances during the work period, the manipulation of fish passage, and the semi-permanent presence of the barrier on the landscape. But the barrier will also have moderate beneficial impacts to the natural condition and unique ecological and scientific value of recommended wilderness from the protection of native fish populations. Although recommended wilderness is a fundamental resource at the park, the preferred alternative will only result in minor, site-specific and local, short and long-term adverse impacts to recommended wilderness; therefore, there will be no impairment to recommended wilderness.
- **Natural Soundscapes** – the fish passage barrier will have minor to moderate adverse impacts to natural soundscapes from noise produced by some motorized equipment and tools and approximately three anticipated helicopter flights. Although natural soundscapes are a fundamental resource at the park, the preferred alternative will only result in minor to moderate, site-specific and local, short-term adverse impacts to natural soundscapes; therefore, there will be no impairment to natural soundscapes.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of

public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the preferred alternative.