

National Park Service
U.S. Department of the Interior

Glacier National Park
Montana



*Quartz Creek Fish Barrier
Environmental Assessment*

August 2004

Quartz Creek Fish Barrier Environmental Assessment

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

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Summary

Since Glacier National Park was designated a National Park in 1910, native fish populations have been negatively impacted by non-native fish species. In the early years, most of these impacts were associated with the stocking of non-native fish into lakes with pure native species. As a result, native fish began breeding with non-native fish. In more recent years the major impact on native fish has been from the invasion of non-native species through the Flathead River system into the lakes and streams of Glacier National Park. The invasion of non-native lake trout into the lakes and streams west of the Continental Divide are having a major adverse impact on populations of federally-threatened bull trout as well as the native westslope cutthroat, a Species of Special Concern in Montana.

Of the ten major drainages of the Flathead River in Glacier National Park that contain bull trout, only the upper Quartz Creek drainage located in the North Fork area is altogether free of non-native fish species. Glacier National Park, with the assistance of the U.S. Fish and Wildlife Service, proposes to construct a fish barrier on Quartz Creek between Middle and Lower Quartz Lake to prevent the migration of non-native fish species into the upper Quartz drainage. This project would provide substantial protection to one of the last remaining enclaves of bull trout and westslope cutthroat trout in a northern Rocky Mountain headwater drainage.

Two alternatives are considered in this Environmental Assessment (EA): 1) the No Action Alternative under which no fish barrier would be constructed in Quartz Creek and 2) the Preferred Alternative under which a fish barrier would be constructed between Lower and Middle Quartz Lakes on Quartz Creek. The following table summarizes the effects on impact topics determined to potentially be affected by the proposed project.

The No Action Alternative would have major, long-term, regional adverse effects on aquatic resources. The cumulative effects would be major, long-term, regional, and adverse. The Preferred Alternative would have moderate, long-term, regional beneficial impacts to aquatic resources. Cumulative effects would be moderate, long-term, localized, and beneficial.

Public Comment

If you wish to comment on the environmental assessment, please send your comments to the address below, or transmit them to the park via e-mail at glac_public_comments@nps.gov. This environmental assessment will be on public review for 30 days in accordance with the National

Environmental Policy Act. This environmental assessment is also available on our website at www.nps.gov/glac. Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety. At the conclusion of the comment period, the National Park Service will either issue a notice of intent to prepare an environmental impact statement or a finding of no significant impact.

Superintendent
Attention: Quartz Creek Fish Barrier EA
Glacier National Park
West Glacier, MT 59936

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INTRODUCTION

Background

Glacier National Park is located on the Canadian border in the northwestern section of Montana. The park is in the northern Rockies, and contains the rugged mountains of the Continental Divide. Together with Canada's Waterton National Park, it forms the Waterton-Glacier International Peace Park, and is a World Heritage Site. Outstanding natural and cultural resources are found in both parks.

Glacier National Park is an investment in the heritage of America. Its primary mission is the preservation of natural and cultural resources, ensuring that current and future generations have the opportunity to experience, enjoy, and understand the legacy of Waterton-Glacier International Peace Park.

The purpose of Glacier National Park is to:

- preserve and protect natural and cultural resources unimpaired for future generations (1916 Organic Act);
- provide opportunities to experience, understand, appreciate, and enjoy Glacier National Park consistent with the preservation of resources in a state of nature (1910 legislation establishing Glacier National Park); and
- celebrate the on-going peace, friendship, and goodwill among nations, recognizing the need for cooperation in a world of shared resources (1932 International Peace Park legislation).

Glacier's significance is explained relative to its natural and cultural heritage:

- Glacier's scenery dramatically illustrates an exceptionally long geological history and the many geological processes associated with mountain building and glaciation;
- Glacier offers relatively accessible spectacular scenery and increasingly rare primitive wilderness experience;
- Glacier is at the core of the "Crown of the Continent" ecosystem, one of the most ecologically intact areas remaining in the temperate regions of the world;
- Glacier's cultural resources chronicle the history of human activities (prehistoric people, American Indians, early explorers, railroad development, and modern use and visitation) show that people have long placed high value on the area's natural features; and
- Waterton-Glacier is the world's first international peace park.

Quartz Creek is located entirely in Glacier National Park in the northwest portion of the park, west of the Continental Divide. Quartz Creek flows westerly from Gyrfalcon Lake at an elevation of 7280 feet through Upper, Middle, and Lower Quartz lakes and empties into the North Fork of the Flathead River at an elevation of 3,440 feet. The Quartz Drainage has 40.8 miles of stream and 1203 acres of lakes (Lower Quartz Lake – 166 acres; Middle Quartz Lake – 48 acres; Quartz Lake – 863 acres).

Purpose and Need for the Project

Glacier National Park is a cherished natural legacy to the American people and to other people throughout the world. The park provides unique experiences in the natural world and contains superb examples of pristine natural resources. However, Glacier National Park was rated the most threatened national park and natural area in the 1980 State of the Parks Report to

Congress. One of the concerns noted was the threat to native wildlife, especially from the invasion of non-native fish into pristine waterways. Invasive species were also cited as one of the main threats to Glacier National Park when it was placed on the National Park Conservation Association's Ten Most Endangered Parks list (NPCA 2003).

The upper Quartz drainage is the only one of the ten major drainages of the Flathead River watershed in Glacier National Park that is altogether free of non-native fish species and contains the Columbia River population of bull trout (*Salvelinus confluentus*). This sub-population of bull trout was classified under the Endangered Species Act (ESA) as threatened by the U.S. Fish & Wildlife Service (USFWS) in June, 1998. The reason that Quartz Creek has not been invaded by lake trout (or at least they are not known to have established) is uncertain, but may be related to the somewhat longer migratory corridor and difficulty of passage into this basin. The fact that virtually all other accessible lakes (McDonald, Harrison, Kintla, Bowman, and Logging) on the west side of the Park have been invaded by lake trout makes the future potential for invasion of Quartz Lake highly probable and not merely speculative.

During the period 1999-2001, the USFWS's Creston Fish and Wildlife Center in Kalispell, Montana, completed a study entitled "Glacier National Park, Flathead Drainage Lake Survey, and Fish Passage Evaluation". Their report stated the following: "Clearly, the Quartz Lake chain is one of the remaining strongholds for bull trout in the Flathead drainage on the west side of Glacier National Park. It should be protected from lake trout or other non-native species introductions at all costs" (USFWS 2001).

Non-native lake trout (*S. namaycush*) began to appear in park waters west of the Divide in the late 1950s and early 1960s via the Flathead River system that forms Glacier's western and southern boundary. Other recent invaders into the park's western waters are the rainbow trout and brook trout. Lake trout are known to cause major adverse impacts on native fish populations. These impacts have been documented on Kintla, Bowman, and Logging lakes in the North Fork of the Flathead River drainage as well as numerous other lakes where lake trout have become established. In all cases there has been a significant decline in native fish populations. Fredenberg (2003, in press) 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. Further, he contends that this transition may be rapid (20-30 years) even when habitat conditions remain relatively unaltered from the natural state. Non-native fish can affect native fish populations by preying on their young, hybridizing with the native fish, eating their food sources, and out-competing the native fish in the natural system. These impacts would be especially devastating to the federally-threatened bull trout and westslope cutthroat trout, a Montana Species of Special Concern, in addition to the entire native aquatic assemblage.

The objective of the proposed project is to create a barrier to prohibit the expansion of non-native fish species (primarily lake trout but also brook, rainbow, and Yellowstone cutthroat trout), into the upper Quartz drainage, and thereby protect the integrity of the native fish populations in this area. National Park Service (NPS) and USFWS biologists surveyed the Quartz Creek drainage from its confluence with the North Fork to Upper Quartz Lake. It was concluded that the only feasible location to construct a barrier on Quartz Creek was at a location between Middle and Lower Quartz lakes (Figure 1), especially considering that lake trout have been confirmed in Lower Quartz Lake. Although this site would allow passage of fish from the Flathead River system into the drainage as far as Lower Quartz Lake, it would protect

the upper reaches of the drainage including Middle Quartz Lake, Quartz Lake, Cerulean Lake, and their associated tributaries.

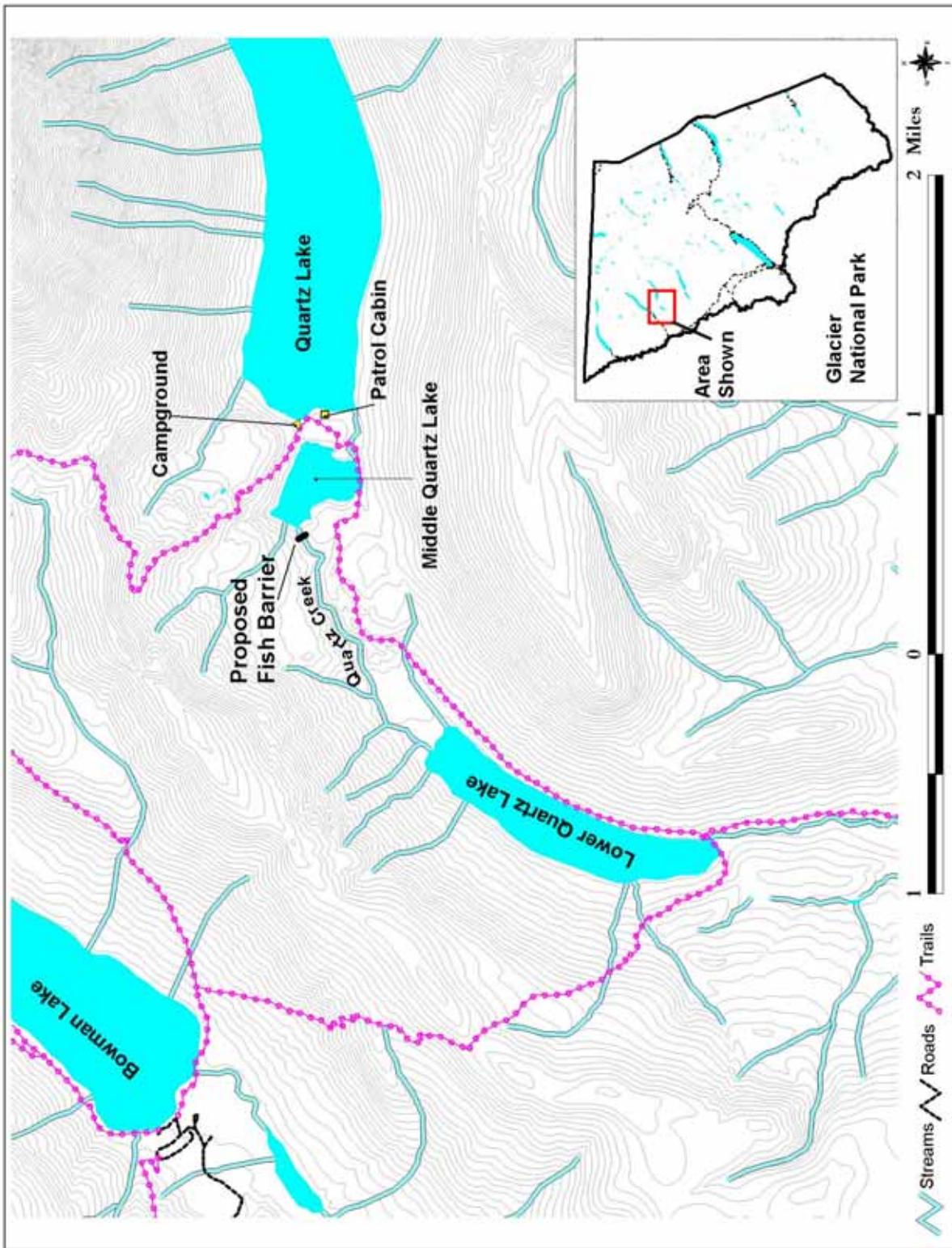


Figure 1. Location of proposed fish barrier.

Public Involvement

Public scoping was conducted from May 12, 2003 until June 9, 2003. Letters were sent to the park's mailing list for EAs, and various federal, state, and local agencies, including the USFWS and the Blackfeet and Confederated Salish and Kootenai Indian Tribes. A press release was issued on May 15, 2003 announcing scoping and *The Missoulian* (one of the state's larger newspapers) wrote an article on the project that was cited by a few of the commenters.

Fifteen comment letters were received. The Montana State Historic Preservation Officer wrote requesting that a cultural resource inventory be conducted. The Army Corps of Engineers wrote that the project most likely would require a General Permit under Section 404 and approval from Montana Fish, Wildlife and Parks. Nine members of the public wrote supporting the project, citing the need to protect habitat and to preserve native species. Two members of the public wrote stating that they did not support the project and that it was a waste of public monies. One individual wrote asking for more information about the barrier and its affects.

Relationship of the Proposed Action to Previous Planning Efforts

The proposed action is consistent with the objectives of Glacier National Park's General Management Plan/Environmental Impact Statement and Record of Decision (1999). The project is proposed within the backcountry zone of the North Fork Corridor. According to the General Management Plan (GMP) the backcountry zone "would be managed to maintain natural processes". The Proposed Action would promote the maintenance of native fish populations within the drainage and, consequently, is in conformance with the GMP for Glacier National Park. Because of its remote location, no other recent planning efforts have been conducted for the project area.

IMPACT TOPICS

Resources that may be affected by the project alternatives were identified by National Park Service staff and other federal and state agencies. Impact topics were derived from these resources to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were identified on the basis of federal laws, regulations, orders, and National Park Service Management Policies (2001), and input received during scoping. Only one impact topic was identified for analysis in this EA. All other impact topics were dismissed. A brief rationale for the selection of this impact topic is given below, as well as the rationale for dismissing the rest of the impact topics from further consideration.

Impact Topics Considered

Aquatic Resources (including Bull Trout and Westslope Cutthroat Trout)

Bull trout and westslope cutthroat trout, among other aquatic resources, live in Quartz Creek and Quartz Lake. The project is being proposed to improve conditions for these native fish species, therefore they would be affected, and aquatic resources are included as an impact topic.

Impact Topics Eliminated from Detailed Study

Topography, Soils, and Geology

According to the National Park Service's 2001 Management Policies, the National Park Service will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2000). These policies also state that the National Park Service will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

The soils between Middle and Lower Quartz Lakes are classified as silty clay loam glacial soils (Dutton et al. 2001). This is the most common soil type in the park, covering much of the North Fork and the McDonald Valley. The soil has high productivity and revegetation potential. The soil type is moderately susceptible to weed infestation when disturbed (Dutton et al. 2001).

Rocks and boulders from the project vicinity would be used to construct the gabions. This would require moving a limited amount of native material a short distance from its naturally occurring location resulting in a long-term minor change to the geologic features on site. There may be some short-term trampling of soils along the creek during the construction period. However, the construction period would be short, the work crew small, and equipment would be minimal. Therefore, trampling impacts to soil would be minor and easily recoverable.

Vegetation

According to the National Park Service's 2001 Management Policies, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2000). The project area is in moist coniferous forest composed of a mixture of lodgepole pine (*Pinus contorta*), western larch (*Larix occidentalis*), subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), and Douglas fir (*Pseudotsuga menziesii*). To construct the fish barrier, three large diameter (about 24 inches dbh) conifers would be required. Live trees from the vicinity could be used, however, if there are downed trees available they could be used in lieu of cutting live trees. The use of three trees, live or dead, from the area would have a minor impact on vegetative cover and species populations. Some additional vegetation adjacent to the barrier site could be trampled during construction, but the impacts would be short-term and minor. Because the effects to vegetation from the proposed project are minor, this topic has been dismissed from further analysis in this document.

Terrestrial Wildlife

According to the National Park Service's 2001 Management Policies, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2000). A search of the park's wildlife sighting database reveals records in the Quartz Creek drainage for a large variety of wildlife species including: waterbirds (e.g., western grebe, cinnamon teal, American wigeon, wood duck, American avocet), raptors (e.g., red-tailed hawk, great horned owl, barred owl), non-migratory residents (hairy woodpecker, three-toed woodpecker, common raven, boreal chickadee), migrant songbirds (e.g., western wood peewee, Swainson's thrush, Townsend's warbler, western tanager), and several mammals (e.g., mountain lion, badger, river otter, black bear, beaver, moose, elk).

The construction would have negligible, temporary impacts on the wildlife habitat through trampling of vegetation and the use of three trees for the barrier. During construction, the use of chainsaws and the presence of a work crew would increase noise in the area which may disturb some wildlife in the immediate vicinity; however, this impact would also be temporary and negligible. Because the effects to wildlife and wildlife habitat from the proposed project are negligible, this topic has been dismissed from further analysis in this document.

Threatened and Endangered Species and Species of Concern

The Endangered Species Act of 1973 requires examination of impacts on all federally-listed endangered, threatened, and candidate species. Section 7 of the Endangered Species Act (ESA) requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the 2001 Management Policies and Director's Order 77 Natural Resources Management Guidelines require the National Park Service to examine the impacts on federal candidate species, as well as state-listed endangered, threatened, candidate, rare, declining, and sensitive species (NPS 2001).

Further protection under the Migratory Bird Treaty Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition, this act serves to protect environmental conditions for migratory birds from pollution or other ecosystem degradations. Some migratory birds may be present in trees adjacent to the site, but most of the construction would occur within the creek. Construction-related noise could potentially disturb bird species, but these adverse impacts would be 1) temporary, lasting only as long as construction, and 2) negligible, because suitable habitat for birds is found throughout the vicinity.

A Biological Assessment was completed by Glacier National Park, and the findings concurred with by the USFWS, as required under Section 7 of the ESA. It was determined that the proposed project would have no effect on bald eagle, Canada lynx, gray wolf, grizzly bear, Spalding's catchfly, or water howellia. Effects to federally-listed bull trout are discussed under the "Aquatic Resources" section. Based upon the following information no terrestrial, federally-listed species or species of special concern would be affected and therefore these species will not be discussed further.

Bald eagle: There are no bald eagle nests in the project area. Work would occur in September, at which time the bald eagles would be migrating out of the area. Work would begin no earlier than one hour after sunrise to minimize disturbance to migrating bald eagles and other wildlife. No habitat would be lost. There would be negligible, short-term, localized adverse effects to bald eagles under the proposed project.

Canada lynx: The proposed project is located near potential lynx habitat. Work would occur during the day, and would begin no earlier than one hour after sunrise to minimize disturbance to lynx and other wildlife. The project would occur in the fall, after the sensitive denning period. No habitat would be lost. There would be negligible, short-term, localized adverse effects to Canada lynx with the proposed project.

Gray wolf: The proposed project is not located within areas used by wolves (NPS files and personal communication with Tom Meier, USFWS pilot, March 13, 2003). The construction would occur in September, after the critical denning period, and work would occur no earlier than one hour before sunrise, to minimize impacts to wildlife. No habitat would be lost. There

would be negligible, short-term, localized, adverse effects to gray wolves with the proposed project.

Grizzly bear: The proposed project is located within grizzly bear habitat, but due to the short period of disturbance, and the restriction of work to begin no earlier than one hour after sunrise, and no loss of habitat, the proposed project is expected to have negligible, short-term, localized, adverse effects to grizzly bears.

Listed Plant Species: There are no known federally listed endangered or threatened plant species in Glacier National Park. Habitat for the federally threatened water howellia (*Howellia aquatilis*), a wetland dependent species, may be present in the park, but there are no recorded observations or potential habitat in the project area. Spalding's catchfly (*Silene spaldingi*), recently listed as a federally threatened species, has never been reported in the park, nor has potential habitat been identified. Glacier has one plant species designated as a candidate species by the U.S. Fish & Wildlife Service, slender moonwort (*Botrychium lineare*). Slender moonwort has not been found in the project area and would not be expected in this habitat type. No state listed sensitive plant species are known to occur in the project area.

Species of Concern: The proposed project would involve construction disturbance that would be of such short duration that it would have negligible, short-term, localized adverse effects on the following species of concern that could potentially inhabit the area: marten, fisher, wolverine, common loon, northern pygmy owl, barred owl, and pileated woodpecker.

Water Quality

National Park Service policies require protection of water quality consistent with the Clean Water Act. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters". To enact this goal, the U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in potential degradation of waters of the United States and issuing permits for actions consistent with the Clean Water Act. The U.S. Environmental Protection Agency also has responsibility for oversight and review of permits and actions, which affect waters of the United States. If the Preferred Alternative is implemented, all necessary federal, state and local permits would be obtained to ensure compliance with the Clean Water Act. These include a Section 404 permit from the Army Corps of Engineers, a Montana DEQ 3A permit, a Nondegradation Review Permit from Montana DEQ, and a Montana Fish, Wildlife and Parks 124 Permit.

From 1984 through 1990 Gyr Falcon Lake in the Quartz drainage was included in a comprehensive water monitoring program conducted in Glacier National Park (Ellis et al. 1992). The authors noted that "the lakes selected for study clearly reflect the pristine attributes that stimulated the creation of Glacier National Park and its designation as a Biosphere Reserve".

Sediment releases caused by in stream disturbances during the project would be minimal with construction occurring during the low water period in September. In addition, most of the substrate in the project area consists of very large cobble and boulders. However, during construction a park employee would be at the construction site to monitor sediment releases. If these releases are deemed excessive (highly unlikely given the large substrate material), the activity would be halted until the stream clears. At that time work activities may proceed. The proposed project would also not change water temperatures. There would be localized, negligible, short-term effects to water quality with the proposed project.

Air Quality and Natural Soundscapes

The Clean Air Act establishes specific programs that provide special protection for air resources and air quality related values associated with National Park Service units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. Glacier National Park is classified as a mandatory Class I area under the Clean Air Act, where emissions of particulate matter and sulfur dioxide are to be restricted. The act gives the federal land manager the responsibility for protecting air quality and related values (i.e., including visibility, vegetation, wildlife, soils, water quality, cultural resources, recreational resources, and public health) in Class I lands from adverse air pollution impacts; and to consider, in consultation with EPA, whether proposed industrial facilities will have an adverse impact on these values. Federal land managers are also required to determine whether existing industrial sources of air pollution must be retrofitted to reduce impacts on Class I areas.

During construction activities no heavy equipment would be used, however, the project would require the use of chain saws and small mechanical tools such as come-alongs, hand saws, and hammers. As a result, there may be negligible, short-term, site specific, negative impacts to air quality and sound levels during construction activities. Construction is expected to take ten days but chain saws would only be used for one day. Since impacts would be no greater than negligible, air quality and natural soundscapes were dismissed as impact topics.

Socioeconomics

The proposed project would provide an employment opportunity for only a few individuals for a short time period (about 10 days) during construction. However, the construction would be performed by park employees of the park so no new jobs would be created. Effects on local or regional economies, if any, would be negligible, therefore socioeconomics was dismissed as an impact topic.

Floodplains

Executive Order 11988 Floodplain Management requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The National Park Service under 2001 Management Policies and Director's Order 77-2 Floodplain Management will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2 Floodplain Management, certain construction within a 100-year floodplain requires preparation of a Statement of Findings for floodplains. The proposed fish barrier is functionally dependent upon water and is exempt from compliance with Executive Order 11988 according to National Park Service Floodplain Management Guidelines, 1993. The structure would not modify or occupy the floodplain in such a way that it would affect flood flows. The structure would only be a barrier to fish, and would continue to allow the normal passage of water through the creek. Water can flow through the gabions that form the barrier and no gabions are placed in the main channel only on the sides. Therefore, floodplains were dismissed as an impact topic and a Statement of Findings for floodplains will not be prepared.

Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Executive Order 11990 Protection of Wetlands requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge or dredged or fill material or excavation within waters of the United States. National Park Service policies for wetlands as stated in 2001 Management Policies and Director's Order 77-1 Wetlands Protection, strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with DO 77-1 Wetlands Protection, proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings for wetlands. According to a survey conducted in August 2003, there are no wetlands located at the proposed fish barrier construction site. Therefore, wetlands were dismissed as an impact topic and a Statement of Findings for wetlands will not be prepared.

Wild and Scenic Rivers

The project would occur on Quartz Creek, a tributary of the North Fork of the Flathead River, which is designated as a Wild and Scenic River. The North Fork is over 12 stream miles from the project site and would not be affected by any activities or sediment releases at the project site. There would be no short or long-term effects on the North Fork and no change in water quality, riparian areas, floodplain conditions, or any other outstanding, remarkable, or other significant feature which led to the Wild and Scenic Rivers Act designation. Therefore, Wild and Scenic Rivers was dismissed as an impact topic.

Prime and Unique Farmlands

In 1980, the Council on Environmental Quality directed that Federal Agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. There are no "prime or unique farmlands" in Glacier National Park (NPS 1999a); therefore it was dismissed as an impact topic.

Proposed Wilderness

The 1964 Wilderness Act (16 USC 1131 *et seq.*) provides for protection of wilderness for future generations. Because most of the backcountry of Glacier National Park is proposed wilderness, it is managed as designated wilderness in accordance with NPS policy (NPS 1999b). Management of natural resources in the backcountry zone focuses on protection and restoration of resources and natural processes. It will offer the visitor outstanding opportunities for solitude and natural quiet, and natural processes will prevail (NPS 1999a).

As per NPS Management Policy 6.3.5 Minimum Requirement:

"All management decisions affecting wilderness must be consistent with a minimum requirement concept.... When determining minimum requirement, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resource or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable."

Because the project would involve construction within proposed wilderness, a Minimum Requirement/Minimum Tool Analysis was performed. This is a two-step process to assist in making the correct decision for management activities within wilderness. First, it must be decided if a problem or issue in the wilderness unit needs administrative action. If there is a sufficient need for an undertaking, then a decision is made as to the proper tool/action/method, available from a range of identified alternatives, which would be used to minimize negative impacts on wilderness character and values. The analysis for this proposed project determined that an action was justified and the proper tools could include a chainsaw among other gear. Constructing the fish barrier would involve use of chain saws and hand tools, which would introduce artificial noise into the wilderness. The work would be conducted during September when use of the trails and nearby backcountry campground is lower than during peak summer months. The adverse effects would be short-term, localized, and negligible to minor; therefore proposed wilderness was dismissed as a topic.

Cultural Resources, including Historic Buildings and Structures, Cultural Landscapes, Ethnographic Resources, and Museum Collections

The project is located in an undeveloped area of the park. No historic buildings and structures, cultural landscapes, or museum collections are in the project area. The park has consulted with the Confederated Salish and Kootenai Tribes Historic Preservation Department and the Blackfeet Tribe Cultural Liaison to identify ethnographic properties and none were identified. An archeological survey (June 2003) of the proposed site, between Middle and Lower Quartz lakes, determined that the creek runs in a relatively narrow channel with steep banks on either side. The steepness of the topography bars access to the creek, and there is no evidence or possibility of a trail or travel route along the creek. The park Cultural Resource Specialist has determined that the area of potential effect has been adequately surveyed and no identified and/or unevaluated historic properties exist, and the probability of discovering historic properties within the area of potential effect is highly unlikely. Therefore, all cultural resource topics were dismissed as impact topics.

For Section 106 purposes, the park will document a “no historic properties affected” finding in its annual report to the State Historic Preservation Office in accordance with the *Programmatic Agreement among the National Park Service (Glacier National Park), the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Officer for Management of Historic Properties in Glacier National Park*.

Environmental Justice

Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low Income Populations,” requires all federal agencies to incorporate environmental justice into their mission. The proposed project would not have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency’s Environmental Guidance (1998) because access to the park would be maintained for the public. Therefore, Environmental Justice was dismissed as an impact topic.

ALTERNATIVES CONSIDERED

No Action Alternative

Under the No Action Alternative, the National Park Service would not construct a fish barrier on Quartz Creek. Non-native lake trout would most likely migrate up the drainage from Lower Quartz Lake and eventually occupy the entire drainage.

Preferred Alternative

Under this alternative, USFWS and NPS biologists would construct a fish barrier in Quartz Creek approximately 100 yards below Middle Quartz Lake. USFWS fish biologists believe that a properly designed barrier would prevent the passage of fish, including lake trout, upstream without significantly impeding the movements of native fish out of the drainage. The structure would be designed to take advantage of the lake trout’s poor ability to ascend barriers in a stream while still allowing for movement of fish downstream.

Lake trout typically use slow moving pools along the edge of creeks to move upstream because the main channel of a creek is too powerful to allow passage. Consequently, this project would entail the construction of a barrier that stretches from the creek bank to the edge of the main creek channel on both sides of the creek. This would direct more water through a narrow passage, increasing its force, and making it impassable to fish. The barrier would consist of gabions (metal cages) filled with available rocks and boulders found on site (approximately 576 ft³ of stone required). These porous structures would still allow water to flow through the creek edges without allowing the passage of fish. Approximately, 24 gabions (each 2’ x 2’ x 6’) would be installed. In addition, the location of the barrier was chosen to take advantages of naturally occurring boulders to form part of the barrier. A small amount of excavation along the creek bank may be necessary to ensure no openings are left that fish could fit through. Large logs may be placed upstream of the gabions, across the main channel, to keep fish from jumping upstream. These logs would be obtained by cutting up to three large diameter (about 24 inches dbh) conifers, unless dead and down material of large enough size can be located nearby. The final barrier would be approximately 50’L x 3’W x 6’H.

To construct the barrier, the work crew, equipment, and materials would be packed to the head of Middle Quartz Lake where it would be loaded on to a canoe. The materials would then be paddled down to the end of the lake where it would be unloaded and carried on foot the final few hundred feet. Workers (6-8 total) would utilize the backcountry cabin at the foot of Quartz Lake and Quartz Lake campground, and the project would take approximately 10 days in mid-September to complete. The only motorized equipment anticipated to be used would be a chain saw to cut up the logs. Work would begin no earlier than one hour after sunrise.

Table 1. Summary comparison of alternatives.

Issue	No Action Alternative	Preferred Alternative
Expansion of non-native fish populations into upper Quartz drainage.	Without a barrier on Quartz Creek, non-native fish would most-likely spread into the upper Quartz drainage.	The proposed fish barrier would prevent the movement of fish (including non-native species) upstream while still allowing for downstream dispersal.

Table 2. Impacts on resource topics under each alternative.

Impact Topic	No Action Alternative	Preferred Alternative
Aquatic Resources	This alternative would have major, long-term, regional adverse effects on aquatic resources. The cumulative effects would be major, long-term, regional, and adverse.	This alternative would have moderate, long-term, regional beneficial impacts to aquatic resources. Cumulative effects would be moderate, long-term, localized, and beneficial.

Alternatives Considered but Eliminated from Detailed Study

An alternative location to construct the stream barrier, below Lower Quartz Lake, was considered but rejected due to the size, depth, and topography of Quartz Creek below the lower lake.

The park also considered an alternative to eliminate lake trout from the Flathead River drainage, a drainage area of 4,464 square miles. This would negate the need for a fish barrier to protect the Quartz drainage. Lake trout occupy the main stem, Middle Fork, and North Fork of the Flathead River, and most major lakes connected to these rivers. This includes Flathead Lake (surface area of 122,500 acres), and Bowman, Kintla, and Logging lakes in the North Fork drainage of Glacier National Park. This alternative was rejected because lake trout have spread throughout the basin and it would be infeasible to treat that large of an area due to the enormous costs and resources required. Current fishery technology offers few viable options for removal of nonnative fish species once they are established. Techniques available for treatment could also not ensure that native fish populations would not be significantly impacted or that all individual lake trout would be removed.

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that the “environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA Section 101”:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and

6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Preferred Alternative would best fit criteria 1, 3, and 4 because the fish barrier would preserve native fish populations in the Quartz Creek drainage, thereby providing long term protection of a listed species. The No Action Alternative would not offer any protection to the upper Quartz drainage from the invasion of non-native aquatic species, and does not meet any of the criteria. Therefore, the environmentally preferred alternative is the Preferred Alternative because it would preserve the upper Quartz drainage (lakes and streams) in its natural state.

AFFECTED ENVIRONMENT

Aquatic Resources

The assemblage of fish species above the proposed barrier consists of all native fishes. Below the proposed barrier there have been sporadic reports of lake trout in Lower Quartz Lake and their presence was confirmed in 2003.

Table 3. Fish species present in the Quartz Creek drainage.

Species	Abundance	Native/ Non-native
Westslope cutthroat trout	common	native
Bull trout	common	native
Mountain whitefish	common	native
Slimy sculpin	common	non-native
Longnose sucker	uncommon	non-native
Largescale sucker	common	native
Lake trout	uncommon	non-native

Bull trout: The bull trout (*Salvelinus confluentus*) is listed as threatened under the Endangered Species Act. Bull trout require habitats offering cold summer water temperatures, complex large woody debris accumulations, and clean cobble and boulder substrates (Rieman and McIntyre 1993, Rich 1996). Water temperatures greater than 15° C (approximately 60° F) are believed to limit bull trout distribution (Fraley and Shepard 1989). As a general rule, the colder the summer water temperature, the better the habitat for bull trout, however, recent studies in the Klamath Basin, Oregon, found adult bull trout present at summer maximum temperatures of 20° C (J. Light and D. Buchanan, Weyerhaeuser and ODFW, Corvallis, OR, unpublished data). Other Montana studies found sub-adult bull trout in water temperatures of 4° to 19° C (C. Frissell, U of M, Missoula, pers. comm.). Clancy (1996) demonstrated a strong relationship between bull trout presence and cold summer water temperatures throughout the Bitterroot National Forest. Bull trout have three distinct life history forms: resident and migratory (fluvial and adfluvial) (Goetz 1989). Resident populations usually spend their entire lives in small headwater streams, whereas migratory forms are born and reared in small tributary streams for several years before migrating into larger rivers (fluvial) or lakes (adfluvial).

Bull trout begin their spawning migration from Flathead Lake in April, arriving in the North Fork of the Flathead River in June and July. They remain at the mouths of the spawning tributaries for two to four weeks, entering the tributaries from July through September. Emigration of juveniles from tributaries into the river system occurs from June through August.

They move rapidly downstream, arriving in the mainstem of the Flathead River below the confluence with the South Fork during August and September (Fraley and Shepard 1989).

Historically, bull trout were one of four native salmonid species distributed throughout the Flathead drainage. They co-existed with westslope cutthroat trout (*Oncorhynchus clarki lewisi*), pygmy whitefish (*Prosopium coulteri*), and mountain whitefish (*P. williamsoni*) (Brown 1971). The Flathead Lake bull trout population colonized all three forks of the Flathead River, the Swan River, the Stillwater River, the Whitefish River, and the Lower Flathead River.

Monitoring data in 1992, 1993, and 1994 of spawning runs from Flathead Lake were the lowest on record and led to the listing of the bull trout. These recent declines in the spawning population of bull trout in virtually all monitored streams throughout the North and Middle Forks of the Flathead River indicate that changes in the system are the primary threat to bull trout at this time. Establishment of opossum shrimp (*Mysis relicta*) and the proliferation of predatory non-native lake trout no doubt play a key role in this decline, but complex mechanisms involving bull trout prey species or behavioral interactions with lake trout may also be involved. (Montana Bull Trout Scientific Group 1995)

The Montana Bull Trout Scientific Group (1995) noted that in the North Fork area: “Glacier National Park has a number of lakes which contain migratory (lake maturing, tributary spawning, and rearing) populations of bull trout which do not appear to freely interbreed with fish from Flathead Lake. Within Glacier, the most secure bull trout lakes are Cerulean, Quartz, Middle Quartz, Upper Kintla and Akokala Lakes. These lakes have no exposure to introduced fishes and still contain undisturbed habitat. Bull trout co-exist with westslope cutthroat trout in these lakes”.

Donald and Alger (1993) studied the interaction between lake trout and bull trout in mountain lakes and concluded there was substantial niche overlap, and that lake trout were the dominant species. They concluded that lacustrine populations of bull trout usually cannot be maintained if lake trout are introduced. Because data indicate that bull trout populations in most of the large glacial lakes in the Park are depressed, the highest priority to evaluating and securing the status of native fishes was assigned to the Quartz Creek drainage (Fredenberg 2002).

The Quartz drainage subpopulation has the resilience to recover from short-term disturbances or subpopulation declines within one to two generations. Fish health surveys in 2000-2001 demonstrated existing healthy status. A genetic analysis of bull trout in Glacier National Park (Spruell et al. 2002) noted: “The bull trout inhabiting lakes west of the Continental Divide in Glacier National Park are all significantly different from each other. The lack of defined ‘Glacier National Park lakes’ in the PCA and the high level of differentiation in the dendrogram probably reflects the strong effect of random genetic drift in small isolated populations.” The population of bull trout in the upper Quartz system (upstream from the prospective barrier) is relatively large and robust. Genetic evaluation indicates the core area population has been isolated for many generations.

Westslope cutthroat trout: Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) in the Flathead drainage may be adfluvial, fluvial, or resident. Adfluvial fish occupy large lakes in the Upper Columbia drainage and spawn in tributaries. Fluvial fish reside in rivers instead of lakes and utilize tributaries for spawning. Most adults return to the river or lake after spawning. Resident fish complete their life history in tributary streams and all three life history forms may occur in a single basin.

Westslope cutthroat trout typically spawn at age 4 or 5. Sexually mature adfluvial fish move into the vicinity of tributaries in fall and winter where they stage before beginning their spring migration into spawning streams. They spawn from March to July at water temperatures near 10° C (Shepard et al. 1984). Alternate year spawning has been reported in the Flathead River Basin in Montana (Shepard et al. 1984). Cutthroat trout are thought to spawn mainly in small first and second order tributaries. Migratory forms may spawn in the lower reaches of streams used by resident fish. Headwater reaches of large river basins like the Flathead are typically dominated by resident and fluvial forms, but tributaries to lakes also support adfluvial fish. Most young migratory cutthroat remain in tributary streams for two to three years before emigrating during June or July.

Westslope cutthroat trout prefer cold, nutrient poor waters. Growth rates vary widely but are probably strongly influenced by overall aquatic habitat productivity. Spawning habitat has been characterized as gravel substrates with particle sizes ranging from 2 to 75 mm, mean depths ranging from 17 to 20 cm, and mean velocities between 0.3 and 0.4 m/s (Shepard et al. 1984). Native westslope cutthroat trout are found throughout the Quartz Creek drainage.

ENVIRONMENTAL CONSEQUENCES

Impairment of Park Resources or Values

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, adverse impacts on 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 parks, 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 would harm the integrity of the 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 constitute an impairment. An impact would be more likely to constitute an impairment to the extent 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 to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning document.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating the park. Each topic was analyzed to determine if impacts constituted an impairment to park

resources and values. If the No Action Alternative is implemented (i.e. if no action is taken to prevent the passage of lake trout upstream) an impairment to the park's aquatic resources could occur. If non-native fish species invade the upper Quartz Creek drainage it could be considered a loss of natural integrity to this system. No other impairments to resources or values are expected under either alternative.

Cumulative Impacts

The Council of Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act, requires assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as “the impact on the environment,” which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts are considered for all alternatives.

Cumulative impacts are determined by combining the impacts of the preferred alternative with other past, present, and reasonably foreseeable future actions. Therefore it was necessary to identify other ongoing or reasonably foreseeable future actions within Glacier National Park and, if applicable, the surrounding region that could have similar effects. The following are past (last five years), present and reasonable foreseeable future (next five years) actions that have and could occur in the project area or that could impact bull trout populations in the North Fork drainage:

- Routine maintenance of trails, the campground, and the patrol cabin around Middle Quartz Lake and Quartz Lake. Maintenance of trails, backcountry campgrounds, and patrol cabins are performed on an as needed basis and no maintenance is expected to be occurring during the construction of the fish barrier.
- Recreational fishing that occurs in the adjacent lakes and streams. Levels of recreational fishing at the Quartz lakes or along this section of Quartz Creek are minimal because: 1) the relatively long distance from a road (3.5 miles from Bowman Lake Campground to Lower Quartz Lake), 2) all bull trout must be released, because of their federally-listed status, and 3) the relative inaccessibility of Quartz Creek at the location of the fish barrier due to vegetation and steep banks.
- Flathead National Forest post-fire projects within the Robert and Wedge burned areas. A draft EIS has been released identifying several activities including: salvage harvest, beetle control, and tree planting. These activities would require new roads to be temporarily built, existing roads reopened, and then road closure and rehabilitation once the projects were completed. The initial determination (a BA will be completed after selection of an action alternative) of impacts on bull trout is “may affect, likely to adversely affect”. The proposed activities warranted this determination because of increased sedimentation caused by road decommissioning and timber harvest (USDA 2004). The work would be completed in tributary creeks of the North Fork.

Impact Analysis

The effects of each alternative are assessed for direct, indirect, and cumulative impacts on selected natural and cultural resources and other resources. Impacts are described in terms of intensity (negligible, minor, moderate, or major), context (site specific, local, and/or regional effects), duration (short-term or long-term), and type (adverse, beneficial). The thresholds of change for intensity of an impact are defined in Table 4.

Table 4. Impact threshold definitions.

Impact Topic	Negligible	Minor	Moderate	Major	Duration
<i>Aquatic Resources</i>	Aquatic species would not be affected or the changes would be so slight that they would not be of any measurable or perceptible consequence to the species' population.	Effects to individual aquatic species are possible, although the effects would be localized, and would be small and of little consequence to the species' population.	Effects to individual aquatic species are likely and localized, with consequences at the population level.	Effects to aquatic species would have substantial consequences to species populations in the region.	Short term—Effects extend only through the period of the project. Long term—Effects extend beyond the project period.

Aquatic Resources

No Action Alternative

Impact Analysis: A decision not to construct a fish barrier on Quartz Creek would allow the passage of non-native fish species into the upper Quartz drainage, which is the last major bull trout drainage in the park without lake trout. These non-native species would likely out-compete native species and result in a substantial decline in the native fish populations that inhabit the lakes and streams of the upper drainage. Consequently, this alternative would result in long-term, major, adverse impacts to native fish populations in the Quartz Creek drainage.

All fish movements between the upper and lower Quartz Creek drainages would continue at present levels. Therefore, this alternative would also not ensure the persistence of genetically pure strains of native fish populations that could potentially be used in future re-stocking efforts; invading non-native fish could hybridize with native fish.

Under this alternative, proposed critical habitat for bull trout would not be changed from current conditions.

Cumulative Impact Analysis: This alternative would not influence the effects of routine backcountry maintenance activities because it would not change conditions along the trails or at the campground and patrol cabin. This alternative would not impact the amount of fish caught by fishermen, but the diversity of species could change in the upper drainage if non-native species invade those lakes; the number of native fish relative to non-native fish would be reduced. There would be no increased sedimentation in the North Fork drainage caused by this alternative that would further increase sedimentation levels potentially amplified by post-fire activities on adjacent national forest land. However, the population of native fish in the North Fork drainage (including the Quartz Creek drainage) would most-likely decline as a result of

implementation of this alternative and potential adverse effects from post-fire projects on adjacent national forest land. These impacts would be long-term, major, regional, and adverse.

Conclusion: This alternative would have major, long-term, adverse effects on native fish populations in the Quartz creek drainage. The cumulative impact on recreational fishermen could be moderate, long-term, localized, and adverse depending upon the attitude of the fishermen about their ability to catch native versus non-native fish. However, the cumulative effect of this alternative in conjunction with potential projects occurring elsewhere in the North Fork drainage would result in long-term, major, adverse impacts to the native fish population in this watershed.

This alternative would produce major adverse impacts on aquatic resources whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, or (3) identified as a goal in the park's general management plan or other National Park Service planning documents. The enabling legislation for the park and the 1916 Organic Act state that the purpose of the park is to "preserve and protect natural and cultural resources unimpaired for future generations". If no action is taken, the park will not be preserving the resources it was designated to protect and the integrity of native fish populations in the park would be diminished. The management and research of bull trout also have high priority in the park's *Resource Management Plan* (NPS 1993). Consequently, there could be impairment of aquatic resources in the park as a result of the No Action Alternative. If non-native fish species invade the upper Quartz drainage there would no longer be any major drainages inhabited by bull trout within the park that do not also have non-native fish species. This would likely include the loss of the last genetically pure strain of bull trout in the park.

Preferred Alternative

Impact Analysis: A Fisheries Biological Assessment was conducted for the proposed project and approved in April 2003. The matrix checklist and supporting documentation indicate that the Quartz Creek Fish Barrier Project may affect but would not likely adversely affect the listed bull trout. There is a negligible probability of "take" of ESA listed bull trout or native westslope cutthroat trout. Modification (in the form of a fish barrier) of proposed critical habitat would take place in order to protect the survivability of bull trout and other native aquatic species in the upper Quartz drainage. The Quartz Lake core area could become an extremely valuable refugium for a source to reestablish other similar populations that are in rapid decline. The impact of minor temporary sediment pulses during construction has a negligible probability to impact bull trout and/or bull trout habitat in the Quartz Drainage.

In addition to restricting movement of non-native fish species upstream, the barrier would restrict movement of native species. However, genetic evaluation indicates the core area population has been isolated for many generations, suggesting there is no movement upstream. Any unanticipated risks due to isolation are likely to be long-term, on the order of centuries or more, while the risk of invasion by nonnative species and threat of compromise to this population are much more urgent and near-term. In addition, isolation of this sub-population could serve the unintended consequence of further protecting it from unknown disease or other concerns. Because a sound genetic and fish health baseline profile has been established for the drainage, any longer term consequences of isolation can be evaluated and addressed over time. The installation of the barrier is neither permanent nor irreversible if unanticipated consequences occur.

Sediment releases, which could harm fish, caused by in stream disturbances during the project would be minimal with construction occurring during the low water period in September. In addition, most of the substrate in the project area consists of very large cobble and boulders. However, during construction a park employee will be at the construction site to monitor sediment releases. If these releases are deemed excessive (highly unlikely given the large substrate material), the activity would be halted until the stream clears. At that time work activities may proceed. The proposed project would not change water temperatures.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation and proclamation of Glacier National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Cumulative Impact Analysis: This alternative would not influence the effects of routine backcountry maintenance activities although the local trails, campground, and patrol cabin would be used during construction (approximately 10 days). Levels of use would not increase to a level that would require additional maintenance. This alternative would ensure that backcountry fishermen have the opportunity to fish in lakes inhabited solely by native fish species. This alternative would help maintain current levels of native fish in the upper Quartz drainage. However, the population within the larger North Fork drainage could still decline depending on potential impacts from the post-fire projects on adjacent national forest land. There would be no increased sedimentation caused by the fish barrier project that could further increase sedimentation levels potentially amplified by post-fire activities on nearby national forest land. Therefore, the cumulative impacts of all of these activities could have a long-term, moderate, adverse impact on the regional native fish population but not as a result of implementation of the fish barrier.

Conclusion: Adverse impacts to aquatic resources would be negligible, short-term, and localized. The fish barrier would have moderate, long-term, beneficial impacts on native fish populations in the Quartz Creek drainage, and possibly beyond this drainage if local fish are used in future re-stocking efforts. Cumulative effects in the North Fork drainage could still be long-term, moderate, and adverse depending on potential impacts from activities on adjacent land. However, direct impacts from the fish barrier would expect to be beneficial by protecting intact native fisheries for recreational purposes.

COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

National Environmental Policy Act (NEPA) and Regulations of the Council on Environmental Quality – The National Environmental Policy Act applies to major federal actions that may significantly affect the quality of the human environment. This generally includes major construction activities that involve the use of federal lands or facilities, federal funding, or federal authorizations. If the environmental effects are undetermined then an Environmental Assessment is prepared to evaluate potential impacts. This Environmental Assessment meets the requirements of the NEPA and regulations on the Council on Environmental Quality in evaluating potential effects associated with activities on federal lands. If no significant effects are identified a finding of no significant impact (FONSI) would be

prepared. If significant impacts are identified, then a notice of intent (NOI) would be filed for preparation of an Environmental Impact Statement.

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) – Section 7 of the Endangered Species Act is designed to ensure that any action authorized, funded, or carried out by a federal agency likely would not jeopardize the continued existence of any endangered or threatened plant or animal species. If a federal action may affect threatened or endangered species, then consultation with the U.S. Fish and Wildlife Service is required. The National Park Service has determined that the Preferred Alternative would have no effect on bald eagle, grizzly bear, Canada lynx, and gray wolf, and “may affect, but not likely to adversely affect” bull trout. A biological assessment has been prepared and the USFWS concurred with this determination (May 6, 2003).

Clean Water Act (CWA) and State and Local Water Quality and Floodplain Regulations—If the Preferred Alternative is implemented, all necessary federal, state and local permits would be obtained to ensure compliance with the Clean Water Act. These include a Section 404 permit from the Army Corps of Engineers, a Montana DEQ 3A permit, a Nondegradation Review Permit from Montana DEQ and a Montana Fish, Wildlife and Parks 124 Permit (Stream Preservation Act). The proposed fish barrier is functionally dependent upon water and is exempt from compliance with Executive Order 11988 according to National Park Service Floodplain Management Guidelines, 1993. The structure would not modify or occupy the floodplain in such a way that it would affect flood flows.

Executive Order 11990, Protection of Wetlands-No wetlands would be affected by the No Action alternative or the Preferred Alternative according to the USFWS (1992) National Wetland Inventory Map.

National Historic Preservation Act of 1996, as amended (16 U.S.C. 470, et Seq.) – Section 106 of the National Historic Preservation Act of 1966 (as amended) requires federal agencies to consider effects of any federal action on cultural resources eligible for or listed in the National Register of Historic Places (NHRP), prior to initiating such actions. Glacier National Park, the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Officer (SHPO) have executed a Programmatic Agreement (PA) for the management of historic properties in the park. The Agreement outlines procedures for complying with Section 106 identification and evaluation and findings of effect in defined instances. The proposed project falls under the Programmatic Agreement, and no further Section 106 review is required. Glacier National Park prepares an annual report to the SHPO that lists the activities carried out under the terms of the PA. This project will be documented in the park’s FY04 annual report.

CONSULTATION AND COORDINATION

Agencies and Groups Contacted

U.S. Fish and Wildlife Service

Dr. Christopher S. Guy, Assistant Unit Leader, Montana Cooperative Research Unit, Montana State University

The Blackfeet Tribe and the Confederated Salish and Kootenai Tribes were consulted on this project in accordance with legislation, regulations and NPS policy concerning consultation with American Indian Governments, communities, and groups, and they had no ethnographic concerns. The CSKT requested an archaeological survey be conducted prior to the work.

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List of Environmental Assessment Recipients

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Burlington Northern Santa Fe Railroad
Chair, Flathead County Board of Commissioners
Coalition for Canyon Preservation
Confederated Salish and Kootenai Tribal Preservation Department
Conrad Burns, United States Senate
Dennis Rehberg, United States House of Representatives, Missoula Offices
Ev and Margaret Lundgren
Flathead Basin Commission
Flathead National Forest
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Friends of the Wild Swan
Glacier County Commissioners
Glacier Natural History Association
Glacier Raft Company
Great Northern Whitewater Resort
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John Case
Joyce Spoonhunter, Blackfeet Tribal Cultural Liaison
Judy Martz, Governor of Montana
Steve Martin, Regional Director, National Park Service, Denver
Max Baucus, United States Senate
Mayor of Browning Montana

Mayors and City Councils of Kalispell, Columbia Falls and Whitefish
Montana Department of Environmental Quality Permitting & Compliance, Helena
Montana Department of Environmental Quality, Board of Environmental Review
Montana Department of Environmental Quality, Water Protection Bureau
Montana Department of Natural Resources and Conservation
Montana Environmental Information Center
Montana Fish, Wildlife, and Parks, Region One Supervisor, Kalispell
Montana Intergovernmental Clearing Office of Budget and Planning
Montana Preservation Alliance
Montana State Clearinghouse
Montana State Historic Preservation Office
Montana Wilderness Association
Mr. and Mrs. Galvin
National Parks Conservation Association
Norman and Jean Adams
Pat and Riley McClelland
Public Libraries: Kalispell, Whitefish, Columbia Falls, Helena, Butte, Browning, Bozeman, Great Falls, Missoula, Bigfork, and Lethbridge, Alberta, Canada
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service (Helena and Creston)
U.S. Geological Survey, Biological Resources Division
Waterton Lakes National Park
Wilderness Watch
William Talks About, Chairman, Blackfeet Tribal Business Council

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