



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

Finding of No Significant Impact Swiftcurrent Bridge Replacement

Background

In compliance with the National Environmental Policy Act of 1969 (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine various alternatives and environmental impacts associated with the proposal to replace the Swiftcurrent Bridge in Glacier National Park's Many Glacier Valley. The Swiftcurrent Bridge provides the only access to the Many Glacier developed area, including the National Historic Landmark Many Glacier Hotel and Many Glacier Hotel Historic District, listed in the National Register of Historic Places. Thousands of visitors use the bridge every year, including vehicle and pedestrian traffic as well as concessioner operated horseback rides.

The Swiftcurrent Bridge is rapidly losing its structural integrity. The deck is severely damaged, and the abutments and piers are in disrepair. The bridge also has limited capacity to handle high water due to the four interior piers. Hydrologic issues worsen during spring break up when fragments of ice flowing off Swiftcurrent Lake are trapped by the piers. Ice break up is also resulting in scour, wear, and stress to the piers and abutments. Other concerns are the severely deteriorated concrete curb and sidewalks, loose or missing stone masonry, and the suspended utility conduits and multiple lines of flexible cable/wiring alongside the bridge's deck and encased within the sidewalk. Inspection reports prepared by the Federal Highway Administration (FHWA) and its contractors list the bridge's structural condition as poor to fair primarily due to concrete deck deterioration and recommend that it be replaced. The existing Swiftcurrent Bridge will be replaced with a new, clear span bridge.

The Swiftcurrent Bridge needs to be replaced to preserve access (including vehicle and pedestrian traffic as well as concessioner-operated horseback rides) to the Many Glacier developed area while maintaining the historic character of the Many Glacier Hotel Historic District. If the bridge is not replaced, it is likely that the existing structure will eventually be unsafe for vehicle and possibly equestrian and pedestrian traffic, and ultimately access across the bridge will be limited or prohibited.

The historic significance of the Swiftcurrent Bridge was not evaluated when the Many Glacier Hotel Historic District National Register Nomination was last revised in 1995. Since then, the bridge has been determined to be eligible for listing in the National Register of Historic Places (Boughton 2010). The new bridge will be designed to be compatible with the historic and architectural characteristics of the historic district.

Selected Action

Alternative B, Replace the Swiftcurrent Bridge, 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:

- Maintain access across the Swiftcurrent Lake outlet to the Many Glacier developed area and Many Glacier Hotel.
- Maintain the historic character of the Many Glacier Hotel Historic District and minimize adverse impacts to historic properties to the extent possible.
- Address safety concerns associated with the severely deteriorated bridge, including non-code compliant utility lines.
- Minimize adverse effects to natural resources and protect natural stream and floodplain processes.

Under Alternative B, the existing 75-foot, 5-span, reinforced concrete slab Swiftcurrent Bridge will be replaced with an 85-foot single span, concrete slab beam bridge on the existing alignment. The four interior piers and existing abutments will be removed to somewhat improve the bridge's hydraulic capacity. New abutments will be constructed at the outer edges of the stream channel just beyond the position of the existing abutments. The new bridge will be supported on deep foundations, which will require the installation of piles. The new deck and abutments will be pre-fabricated off site and hauled to the bridge site. Utilities will be reorganized and contained within the new bridge to reduce safety hazards, improve aesthetics, and comply with applicable codes.

The new bridge will be designed to preserve to the extent possible the primary visual and aesthetic elements of the historic bridge. The top of the bridge deck will be raised approximately 9 inches from its current elevation, and will approximate the existing historic profile. Although the depth of the concrete slab beams will be greater than that of the historic concrete slab, the sidewalks on both sides of the new bridge will be cantilevered 24 inches from the beams to mimic the 12-inch depth of the existing slab. The sides of the exterior beams will be dark colored concrete. The bridge's wing walls will be constructed with stone masonry and concrete, blending with the historic landscape. The new bridge will match the existing bridge width of 28 feet-8 inches, and will replicate two 9-foot lanes, a 3-foot wide sidewalk, and a 5-foot wide bridle path; the sidewalk and bridle path will be separated from vehicle traffic with curbing. The existing railings will be replaced with new railings of similar design to the historic, but with modifications to height and baluster spacing so that they meet current codes. The existing bridge deck may be removed without the need for work crews or equipment to access the creek, but some in-water work involving an excavator or other like equipment will be required to remove the stone piers and salvage masonry for reuse, though no excavation of the lake bed will occur. Riprap will be placed at the new abutments to reduce the potential for stream flow and ice scour at the abutments to protect roadway embankments. The riprap will likely be in the class 5 size category (20 by 28 inches, approximately), based on hydraulic analysis of the stream at the bridge site. The riprap will be placed over a geotextile mat and a thinner layer of smaller sized riprap to securely set the larger stones on the streambed. Limestone and smaller sized riprap will be incorporated onto the larger riprap to visually tie it into the historic character and aesthetics of the surrounding landscape.

The large-scale demolition and construction associated with the replacement of the Swiftcurrent Bridge is anticipated to occur in the fall of 2014, from late September through the first week of December. Unforeseen circumstances, primarily severe late season weather, could necessitate some work in the spring of 2015, such as stone masonry and low intensity deck work (the installation of bridge railings, for example). Remaining masonry construction, roadway

preparation, and paving required to complete the project will occur in late summer/early fall of 2015. This final phase of the project is expected to require eight weeks or less (approximately).

In order to reduce impacts to visitors and concessioners, the bridge replacement must be completed within a narrow timeframe. Bridge work will not begin until late September, after the Many Glacier Hotel and other concessions close for the season, and will proceed through the first week of December. Work will not occur during the winter months; access across the bridge must therefore be reestablished prior to shutting the project down for the winter so that the bridge is accessible when the Many Glacier Road reopens to visitor traffic in the spring of 2015. Given the narrow project timeframe, bridge demolition and construction may be scheduled to occur twenty-four hours a day, seven days a week. The access road to the Many Glacier developed area and the Many Glacier Hotel will be closed to all traffic during the September-December work period. Completion work during the late summer/early fall of 2015 will be limited to daytime hours; access to the Many Glacier developed area, including the hotel will remain open during this time.

Over the duration of the project, work will occur within the immediate vicinity of the bridge, with some staging of materials and equipment on the adjacent roadway and at nearby parking areas and turnouts, including portions of the upper parking lot at Many Glacier Hotel. To facilitate ongoing construction projects and winterization procedures at the Many Glacier Hotel and Lake Josephine Boathouse, concessioners will use motorized boats to access these areas while the bridge is unusable.

Mitigation Measures

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

Fisheries and Water Resources

- Best management practices will be implemented to ensure no pollutants enter the lake as a result of the project.
- Only biodegradable, vegetable-based hydraulic fluid will be used in excavators that may reach into Swiftcurrent Lake.
- All fueling will occur more than 100 feet from any surface water in a location where a fuel spill will not be able to enter the water. An exception to this will be for re-filling tracked equipment as the entire project length parallels open water. For this situation, two people will be required to monitor both the pump and fuel nozzle.
- Vehicles and equipment will be regularly inspected for leaks; any leaks will be repaired immediately.
- A fuel/lubricant spill absorption kit will be in place to address potential land and water spills and leaks.

Wildlife and Federally Listed Species

- Construction personnel will be orientated on appropriate behavior in the presence of wildlife and on proper storage and handling of food, garbage and other attractants.
- The bridge site and staging areas will be monitored by Glacier National Park wildlife monitors and/or law enforcement rangers throughout the duration of the project.

- Hauling vehicles greater than 20,000 gvw (gross vehicle weight) travelling the Many Glacier Road within the park boundary at night will be limited to speeds 10 mph below the posted speed limit to avoid collisions with wildlife.
- Onsite wildlife monitors and/or park law enforcement rangers will monitor hauling and escort nighttime hauling trucks from the park entrance to the project area whenever possible (subject to logistics associated with haul times and staff availability, for example).
- If work is necessary in the spring, it will not begin until after March 31, in accordance with the Many Glacier Road closure and the core security period for wildlife protection.

Vegetation

- 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.
- Non-native invasive plant infestations near the bridge will continue to be treated on a yearly basis, with emphasis on the disturbed area for a minimum of three years following project completion.
- All equipment entering the park will be inspected and may be required to be pressure washed to remove foreign soil, vegetation, and other materials that may contain non-native seeds or vegetation.

Soils

- Glacier National Park's Best Management Practices will be implemented to minimize the extent of impacts.
- Disturbance to soils 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.
- Any topsoil temporarily disturbed during construction will be aerated and replanted with native vegetation to reduce compaction and prevent erosion.
- Any disturbed top soil will be salvaged, stored, and used to restore the area.

Historic Structures and Cultural Landscapes

- The new Swiftcurrent Bridge will be designed to be compatible with the Many Glacier Hotel Historic District.
- The Memorandum of Agreement (MOA) documenting mitigation requirements for the adverse effect to the Swiftcurrent Bridge has been signed with the Montana State Historic Preservation Office (SHPO). In addition to designing the new bridge to be compatible with the architectural characteristics of the historic district (as stated above), measures included are Historic American Engineering Record documentation of the existing bridge and interpretive signs (see Appendix A for the draft MOA).

- The park's Historic Landscape Architect will monitor the work and serve as a liaison between FHWA personnel administering the contract and Glacier National Park.

Visitor Use and Experience

- Bridge demolition and construction will not begin until late September, after the peak visitor season and traffic on the Many Glacier Road is at a decreased level. Work occurring the following year after bridge demolition and construction will allow for traffic along the Many Glacier Road and access across the bridge to the Many Glacier Hotel.
- With the exception of one pullout just east of the Swiftcurrent Bridge access road, equipment and materials will not be staged at turnouts that could be used by visitors during time periods when the Many Glacier Road is open to public vehicles. The upper parking lot at Many Glacier Hotel will be available for staging except for summer/fall of 2015.
- Signs will be posted at trailheads along hiking trails in the area alerting hikers to detours around the project area.

Night Skies

- Work lights will be shielded to direct the light downward and minimize the amount of upward light scatter.

Park Operations

- Concession operators in the Many Glacier area will be invited to appropriate preconstruction and orientation meetings to better inform any concessioner operational adjustments that will be needed.
- Construction work during summer/fall 2015 will cease in the morning and evening to accommodate two equestrian bridge crossings. All-day and half-day rides that normally cross the bridge throughout the day will require concessioner operational changes possibly including different departure locations and schedules to ensure horse and rider safety.
- Concessioner access to properties on the opposite side of the bridge via motorized boat will occur during daylight hours, unless preapproved by the NPS.
- Boat fueling procedures will be developed by the concessioner or contractor in advance for NPS review and approval. Procedures will comply with applicable federal regulations and other NPS approved environmental management plans.
- The NPS will develop emergency response protocols for the Many Glacier Hotel and other properties on the other side of the bridge for the time that the bridge is not in place.
- Generator fuel necessary for winterization and maintenance activities will be staged in advance of bridge demolition. Additional fuel transportation requirements will be approved by the NPS prior to transport.

Alternatives Considered

Two alternatives were evaluated in the EA including the no action alternative and one action alternative. Under Alternative A, No Action, the Swiftcurrent Bridge will not be replaced. Alternative B, Replace the Swiftcurrent Bridge, is the preferred alternative, as described in the previous section.

The EA also evaluated the following alternative that was eliminated from detailed study:

Preserve the existing bridge and bridge elements in place. Preserving the existing bridge or selected bridge elements in place was considered (leaving the original piers in place beneath a single span bridge, with no load on the piers, was considered, for example). Preserving the existing bridge and/or elements was deemed infeasible, however, as documented in previously referenced inspection reports. The existing bridge and bridge elements including fabric and overall structural integrity have deteriorated to a point where retaining them was determined not to be possible, as the elements are not suitable for reuse.

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.”

Overall, Alternative A (no action) is the environmentally preferable alternative because there will be no activities that will disturb elements of the biological and physical environment. However, while there will be no new adverse impacts to floodplains, the existing constriction to flood flows presented by the bridge and the road will continue and project objectives will not be achieved.

Alternative B (replace the Swiftcurrent Bridge) is not the environmentally preferable alternative because it will demolish the historic Swiftcurrent Bridge, a contributing feature to the Many Glacier Hotel Historic District; temporarily disturb and possibly displace wildlife, including the threatened grizzly bear and Canada lynx and the proposed threatened wolverine; and temporarily disturb the natural soundscape.

While Alternative B is not the environmentally preferable alternative, it will best accomplish the purpose and need of the proposal and will not significantly impact (cause major effects to) affected cultural and natural resources. Alternative B will provide for visitor use and enjoyment, which, in addition to resource conservation, is in accordance with the 1916 Organic Act for the National Park Service. Through mitigation measures and project design, Alternative B will achieve a balance between visitor use and enjoyment and conservation of park resources. Department of the Interior (DOI) regulations do not require that the environmentally preferable alternative be selected as the NPS preferred alternative (DOI 43 CFR Part 46, Implementation of the National Environmental Policy Act of 1969, § 46.420).

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. But the overall benefit of the project, particularly to visitor use and experience, outweighs these negative effects. The adverse impacts are summarized as follows: Demolition of the Swiftcurrent Bridge will remove a contributing resource from the Many Glacier Hotel Historic District, causing moderate, adverse, long-term, site-specific to local impacts to historic structures and cultural landscapes. The demolition of the bridge will be an adverse effect under Section 106. Noise, disturbance, and limited access to the Many Glacier developed area during construction will have short-term minor to moderate, site-specific adverse impacts to visitor use and experience. Limited turbidity during removal of the bridge's existing piers and abutments and placement of new abutments and riprap will have short-term negligible to minor, site-specific adverse impacts on water resources. There will be short-term, negligible to minor, site-specific to local adverse impacts to wildlife and minor to moderate, site-specific to local adverse impacts to grizzly bears, Canada lynx, and wolverines due to construction, human activity and vehicle traffic. Wildlife, grizzly bears, lynx, and wolverines crossing the Many Glacier Road will be at some risk of injury or mortality from vehicle collisions, but this risk will be minimized by the mitigation measures. The Section 7 determination for effects to grizzly bears and lynx are "may affect, not likely to adversely affect", and "not likely to jeopardize" for wolverine. Noise during construction will have short-term moderate, site-specific to local adverse impacts on natural soundscapes within the Many Glacier developed area.

Maintaining bridge access to the Many Glacier Hotel and associated developed area for the long term will be the overall benefit of implementing the preferred (selected) alternative. Replacing the Swiftcurrent Bridge will have moderate, long-term, site-specific to widespread and possibly regional beneficial impacts to visitor use and experience. Flood flow constriction caused by the existing bridge's piers and abutments is currently minimal; replacing the bridge with a clear span bridge will somewhat reduce this constriction, with only negligible to minor, long-term, site-specific beneficial impacts to the Swiftcurrent Lake/Creek floodplain. A statement of findings (SOF) for floodplains was prepared and is attached to this FONSI.

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

Replacing the Swiftcurrent Bridge will address safety concerns associated with the severely deteriorated existing structure, including non-code compliant utility lines, thereby maintaining safe access across the bridge.

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

The Swiftcurrent Bridge is listed as a contributing resource to the Many Glacier Hotel Historic District, which was listed in the National Register of Historic Places in 1976. The Many Glacier Hotel is a National Historic Landmark (designated in 1987). The National Register Nomination for the district was amended in 1996 and again in 2011; the Montana State Historic Preservation Office concurred with the park's determination that the Many Glacier Road and seven

resources, including the Swiftcurrent Bridge, met the criteria for listing in the National Register of Historic Places. Demolition of the Swiftcurrent Bridge will remove a contributing resource from the Many Glacier Hotel Historic District, causing moderate, adverse, long-term, site-specific to local impacts to historic structures and cultural landscapes. The demolition of the bridge will be an adverse effect under Section 106. The new bridge will be designed to be compatible with the historic and architectural characteristics of the historic district, and an MOA has been signed with the Montana SHPO documenting mitigation requirements for the adverse effect.

The Many Glacier Valley is an ecologically critical area. The valley provides connectivity between several primary wildlife travel corridors and is made up of diverse and productive habitat that supports numerous wildlife species year-round, including grizzly bears, Canada lynx, and wolverines. The Many Glacier Valley is a seasonal bear concentration area, and important grizzly bear travel corridors exist near the Swiftcurrent Motor Inn and the Many Glacier Hotel. The park actively discourages grizzly bears from frequenting the Many Glacier developed area in accordance with the management protocol for areas in Management Situation 3. There will be minor to moderate, site-specific to local adverse impacts to grizzly bears, Canada lynx, and wolverines from the project. The Section 7 determination for effects to grizzly bears and lynx are "may affect, not likely to adversely affect", and "not likely to jeopardize" for wolverine. The U.S. Fish and Wildlife Service (USFWS) concurred with the NPS determinations.

The Swiftcurrent Bridge is located within the 100-year floodplain of Swiftcurrent Lake. Flood frequency analyses have identified 100- and 500-year flood flows. Replacing the bridge with a clear span bridge will somewhat reduce flood flow constriction, with negligible to minor, long-term, site-specific beneficial impacts to the Swiftcurrent Lake/Creek floodplain.

The project will not affect wetlands or recommended wilderness, since there are no wetlands in the project area and the project area is outside the recommended wilderness boundary. There are no 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.

Throughout the environmental process, the proposal to replace the Swiftcurrent Bridge was not highly controversial, nor are the effects expected to generate future controversy. Four letters were received during scoping; two (from the U.S. Army Corps of Engineers and the Montana Department of Environmental Quality) outlined regulatory requirements for the project, and two were from individuals who supported the project.

There were concerns early in the EA process about how limited access to the Many Glacier developed area during construction will interfere with concessions operations and rehabilitation work at the Many Glacier Hotel. The start date for the bridge replacement was moved from the fall of 2015 to the fall of 2014 in order to ensure access during rehabilitation work at the hotel, which is planned for the fall 2015. Concession operators in the Many Glacier area will be invited to appropriate preconstruction and orientation meetings. Additionally, the Many Glacier Hotel upper parking lot will not be used for construction staging during the summer/fall of 2015.

Five comment letters were received during public review of the EA; all were supportive. A total of 14 comments are considered substantive or warranted a response and are addressed in the attached Errata Sheets.

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

The Swiftcurrent Bridge will be replaced in cooperation with the FHWA, which has done a number of engineering analyses and designed the replacement structure in accordance with well established bridge design protocols and standards. The effects of replacing the Swiftcurrent Bridge therefore do not pose uncertainties and are fairly straightforward. The environmental process has not identified any effects that may involve highly unique or unknown 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.

While the preferred alternative will remove a contributing resource from the Many Glacier Hotel Historic District and result in an adverse effect to cultural resources, it has been selected in order to retain access to the Many Glacier developed area. The preferred alternative will maintain an existing use and does not set 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 selected alternative will result in the demolition of the Swiftcurrent Bridge, which will remove a contributing resource to the Many Glacier Hotel Historic District. This will result in a long-term moderate adverse impact to cultural landscapes and historic structures. The removal of the piers will permanently alter some of the historic visual characteristics of the site. The demolition of an historic property is an adverse effect under Section 106 and its implementing regulations, 36 CFR800.

A site visit with the Montana State Historic Preservation Officer occurred on August 28, 2012. The NPS documented a finding of "adverse effect" in a letter to the Montana SHPO dated January 6, 2014. A letter from the Montana SHPO dated January 24, 2014 confirmed the NPS's "adverse effect" determination under Section 106 of the National Historic Preservation Act. The new bridge will be designed to blend with the landscape, thereby preserving some of the visual and aesthetic characteristics of the original bridge. The new bridge will also match the width of the original bridge. An MOA between Glacier National Park and the Montana SHPO documenting mitigation requirements for the adverse effect to the Swiftcurrent Bridge was signed by the SHPO on February 13, 2014. The project will not result in the loss of significant scientific, cultural, or historical resources.

The park also notified the Advisory Council on Historic Preservation of the adverse effect finding in a letter dated November 19, 2012, which was copied to the Montana SHPO. The park did not receive a response from the Council. As required under Section 106, the park transmitted the signed MOA to the Council. In reply, the Council stated that it had no record of

receiving earlier notice from the park and had therefore been precluded from participating in the consultation process. Park staff forwarded a copy of the original letter and SHPO correspondence to the Council. After reviewing that documentation, the Council stated that it will not reopen consultation at this time and will consider the MOA as having been filed with them in accordance with Section 800.6(b)(1)(iv).

No comments were received from the Blackfeet Tribal Business Council or the Confederated Salish and Kootenai Tribes.

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.

The preferred alternative could negatively affect grizzly bears, Canada lynx, and wolverines that rely on low levels of human activity during the fall to travel and/or forage near the foot of Swiftcurrent Lake and within the Many Glacier Road corridor. The presence of project personnel during the construction period will increase the potential for grizzly bears to become habituated to people. Grizzly bears, lynx, or wolverines crossing the Many Glacier Road will be at some risk of injury or mortality from vehicle collisions, but this risk will be minimized by mitigation measures that will be in place (see Mitigation Measures). Adverse impacts to grizzly bears, Canada lynx, and wolverines will be short-term and minor to moderate. Impacts from completion work the following summer/fall will be minor due to the reduced intensity of the work and the absence of nighttime construction.

The Section 7 determination of effects are “may affect, not likely to adversely affect” for grizzly bears and Canada lynx, and “not likely to jeopardize” for wolverines. In accordance with Section 7 of the Endangered Species Act, Glacier National Park initiated informal consultation with the USFWS on November 7, 2012. On December 13, 2013 the park submitted a biological assessment to the USFWS addressing the effects to federally listed species. The USFWS concurred with the effects determinations in a letter dated January 7, 2014. The park informed the USFWS during a phone call on January 6, 2014 that, while not anticipated, the preferred alternative may include possible follow-up work in the spring of 2015 if necessary (if bridge construction is delayed by winter weather conditions, for example). Any necessary spring work will not occur until after the January 1-March 31 core wildlife security period for the Many Glacier Road. Springtime work was not included in the biological assessment submitted to the USFWS on December 13, 2013. Therefore, per the January 6, 2014 discussion with the USFWS and should work in the spring be necessary, the park will submit a “mini-biological assessment” to the USFWS analyzing the effects to threatened and endangered species and requesting concurrence on the modification to the proposal originally described in the biological assessment.

Other state-listed species of concern will not be measurably impacted by the project. Fishers have not been documented in the Many Glacier Valley within the last ten years; habitat for other mammalian species of concern will not be measurably affected; the project will be temporary and limited to the bridge site and most of the work will occur after the bird nesting season; any transient use of the lakeshore by amphibians likely occurs away from the bridge; water temperatures are too warm to support the meltwater and western glacier stoneflies; and the bridge site does not have suitable habitat for the shiny tightcoil. Information on state listed species of concern was provided by the Montana Natural Heritage Program (MNHP) in a report dated December 24, 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 March 17, 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.

Swan Mountain Outfitters (SMO), the horse concessioner operating in Glacier National Park, routinely accesses the Swiftcurrent Bridge during horseback rides. SMO was supportive of the project, but expressed concerns about impacts to trail ride schedules and possible risks to horse and rider safety during the construction period. On January 17, 2014, park staff contacted SMO to discuss the project. The project will not impact SMO's operations during the fall of 2014, since work on the bridge will not begin until after concessions operations close for the season. Any bridge work that needs to occur in the spring of 2015 will be completed before concessions operations resume in mid-June. Construction work during summer/fall 2015 will cease in the morning and evening to accommodate two equestrian bridge crossings. All-day and half-day rides that normally cross the bridge throughout the day will require concessioner operational changes possibly including different departure locations and schedules to ensure horse and rider safety. SMO will be invited to appropriate preconstruction and orientation meetings to better inform any concessioner operational adjustments that will be needed. The bridge will also be accessible before concessions operations begin for the season, with time for horses to become familiar with the new structure. During public review of the EA, SMO submitted a comment letter reiterating their concerns; park staff contacted SMO and confirmed that all are in agreement with regard to scheduled horse crossings and concessioner operational changes (see also *Responses to Comments* in the attached Errata Sheets).

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.

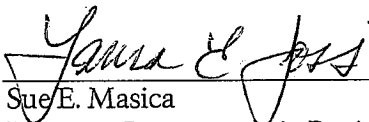
Five comment letters were received during the EA public review period. They included the letter from SMO, a letter from the National Parks Conservation Association (NPCA), which expressed support for the project, and three letters from individuals who also supported the project. Two commenters had questions and suggestions about the design of the new bridge, and one suggested scheduling the work prior to spring runoff. These 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 widespread and possibly 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:

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

4/8/14
Date

Errata Sheets

Swiftcurrent Bridge Replacement

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 14 comments in four of the five letters received during public review of the EA are considered substantive or warranted a response, and are addressed below in the *Responses to Comments* section. Comments considered the design of the new bridge, the potential for impacts on concessioner operated horseback rides during the construction period, and whether the bridge should be replaced before spring runoff.

TEXT CHANGES

Nine text changes have been made to the EA. Text changes were made to clarify the elevation of the new bridge deck; remove Sheep's Curve pullout as a staging location and identify another pullout that may be used for staging purposes; include a mitigation measure for horseback rides and clarify that the horse concessioner will not be using alternate trails; clarify that a mitigation measure to design the new bridge to be compatible with the architectural characteristics of the historic district is included in the MOA with the SHPO; and clarify that the park did not receive notice from the Advisory Council on Historic Properties. Italicized and underlined text indicates the section in the EA that has been altered. Bold text is used to show new text.

p. 15, *Alternative B: Replace the Swiftcurrent Bridge (Preferred)*. The new bridge would be designed to preserve to the extent possible the primary visual and aesthetic elements of the historic bridge. ~~, including its near~~ The top of the bridge deck would be raised approximately 9 inches from its current elevation, and would approximate elevation to approximately match the existing historic profile.

p. 17, *Alternative B: Replace the Swiftcurrent Bridge (Preferred)*. Over the duration of the project, work would occur within the immediate vicinity of the bridge, with some staging of materials and equipment on the adjacent roadway and at nearby parking areas and turnouts, including the ~~turnout at Sheep's Curve and~~ portions of the upper parking lot at Many Glacier Hotel.

p. 18, *Mitigation Measures, Wildlife and Federally Listed Species*

- ~~Sheep's Curve pullout, located within a heavily used wildlife travel corridor, would only be used as an overflow staging area, when there is insufficient space to stage materials and equipment at the bridge site. When in use for staging, the pullout would be inspected by park staff daily.~~

p. 19, *Mitigation Measures, Visitor Use and Experience*

- ~~With the exception of one pullout just east of the Swiftcurrent Bridge access road, Equipment equipment and materials would not be staged at turnouts that could be used by visitors during time periods when the Many Glacier Road is open to public vehicles. Sheep's curve would be available for staging purposes, and the~~ The upper parking lot at Many Glacier Hotel would also be available for staging except for summer/fall of 2015.

p. 19, Mitigation Measures, Park Operations

- Construction work during summer/fall 2015 would cease in the morning and evening to accommodate two equestrian bridge crossings. All-day and half-day rides that normally cross the bridge throughout the day would require concessioner operational changes possibly including different departure locations and schedules to ensure horse and rider safety.

p. 19, Mitigation Measures, Historic Structures and Cultural Landscapes

- The Memorandum of Agreement (MOA) documenting mitigation requirements for the adverse effect to the Swiftcurrent Bridge would be signed with the Montana SHPO. In addition to designing the new bridge to be compatible with the architectural characteristics of the historic district, measures anticipated to be included are Historic American Engineering Record documentation of the existing bridge and interpretive signs. (See Appendix A for the draft MOA).

p. 20, Alternatives, Suggestions, and Concerns from Public Scoping. All day and half day rides that normally cross the bridge throughout the day would require operational changes possibly including different departure locations, and schedules, or alternate trails to ensure horse and rider safety.

pp. 55-56, Compliance Requirements, National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.). The park also notified the Advisory Council on Historic Preservation of the adverse effect finding in a letter dated November 19, 2012, which was copied to the Montana SHPO. The park did not receive a response from the Council. ; the Council did not provide notice that it would participate in the consultation process.

pp. 57-58, Consultation and Coordination, Agency Consultation. The park also notified the Advisory Council on Historic Preservation of the adverse effect finding in a letter dated November 19, 2012, which was copied to the Montana SHPO. The park did not receive a response from the Council. ; the Council did not provide notice that it would participate in the consultation process.

RESPONSES TO COMMENTS

1. Comment: "The new bridge should be raised relative to the existing bridge."

Response: The top of the deck is designed to be raised approximately 9 inches from its current elevation. Please see the text change to p. 15 of the EA clarifying this (see Text Changes, above).

2. Comment: "The new bridge should span the discharge of the lake to prevent obstructions or debris from creating a dam or otherwise impeding flow."

Response: The existing piers will be removed and the new deck will be a clear span across the Swiftcurrent Lake outlet. Additionally, the deck span will be longer than the existing span. Both of these design elements will not prevent obstructions but will certainly reduce the possibility of impeding flows below the structure.

3. Comment: "The bridge should be designed to survive a forest fire in the surrounding area."

Response: Other than utility conduits underneath the deck structure, all the bridge components will be either concrete, stone masonry or steel. Also, in the event of a forest fire,

fire management personnel would be dispatched to the area to protect at risk structures, including the Swiftcurrent Bridge.

4. **Comment:** "The bridge should be designed to withstand a vehicle fire on the bridge span."

Response: There will be no combustible materials on the bridge; please see also response to Comment 3, above.

5. **Comment:** "Vehicle containment should be provided so that a vehicle does not go over the side of the bridge. Take into account today's larger vehicles, red buses, fire trucks, emergency vehicles, etc."

Response: To our knowledge, a vehicle has never gone over the side of the existing Swiftcurrent Bridge and this would be unlikely given the low speeds travelled on this road. The metal railing will be similar to the existing railing and will not be a guardrail.

6. **Comment:** "The bridge should fit in with its surroundings."

Response: The original Swiftcurrent Bridge was designed with the area's visual aesthetics in mind. The new bridge will be designed to preserve some of the visual and aesthetic characteristics of the original bridge and be compatible with the Many Glacier Hotel Historic District. Please see also pp. 2, 3-4, 11, 15, 19, and 35 of the EA.

7. **Comment:** "Lighting from LEDs should come from the sides or road level of the bridge and not from overhead poles that would obscure the scenic view."

Response: There will be no permanent lighting associated with this project.

8. **Comment:** "A pedestrian, bike, and horse crossing capability should be part of the bridge design."

Response: This is part of the bridge design. Please see p. 15 of the EA.

9. **Comment:** "The bridge schematic shows parallel prestressed slabs but no shear keys, transverse post tensioning, or structural topping. Without somehow having these slabs tied together, there could be differential deflection between the slabs and this could cause cracking in the 1.5" wearing surface topping. This could be a maintenance headache in the future. In some states like Minnesota and Florida the prestressed slab units are topped with a structurally reinforced cast-in-place concrete topping to eliminate this maintenance issue."

Response: The slab beams will be connected together with welded keys and all the beams will be covered with a 5-inch cast-in-place concrete deck slab. This bridge design is typical of Washington state bridge design standards.

10. **Comment:** "Since scour was a concern of the original bridge, why isn't there any rip rap protection for the new abutments? With the low profile of the bridge it seems ice could still be trapped between the DHW and the bottom chord. In the right situation you could get high stream velocities around the abutment. The piles may be deep enough to handle the scour but the masonry stonework/wingwalls may get undermined (since it only extends to the existing ground surface)."

Response: As stated in the EA on p. 17, class 5 riprap will be placed at the new abutments.

11. **Comment:** During the busy summer season, we [Swan Mountain Outfitters] have to string our horses up from our bunk house/night corral to the day use corral in the Many Glacier Hotel parking lot. This route requires us to cross over the bridge once in the morning between 6:45am and 7:15am and again in the evening between 5:30pm and 6:30pm. Additionally, we have to cross the bridge throughout the day whenever we do a half day ride on our Swiftcurrent Ridge Trail or an all day ride on our Poia Lake trail. These rides result in up to six additional bridge crossings per day. . .”

Response: As stated on p. 20 of the EA and as agreed to during discussions with park staff, bridge work during summer/fall 2015 will cease in the morning and evening to accommodate two equestrian bridge crossings. All-day and half-day rides that normally cross the bridge throughout the day will require concessioner operational changes possibly including different departure locations and schedules. Swan Mountain Outfitters will be invited to appropriate preconstruction and orientation meetings to better inform any concessioner operational adjustments that will be needed.

12. **Comment:** “Horses are remarkable creatures that can adapt to a host of different working environments as long as the [sic] are exposed to new elements of their environment (in this case, construction equipment, workers in bright vests, flagging and ropes, disturbed ground, noise, etc.) in the proper manner. This will take consistent coordination and communication between our location manager and the crew leader for the bridge replacement work. It is imperative that SMO [Swan Mountain Outfitters] be informed of work schedule and plans up front and on a daily basis in order to ensure the safety of our guests, our employees and our horses.”

Response: As stated in the EA on pp. 20-21, there will be time before the summer/fall 2015 work period for horses to get familiar with the new bridge structure. As agreed to in discussions with park staff, Swan Mountain Outfitters will call the project manager prior to arriving at the bridge with horses in the mornings and evenings to coordinate work stoppage for morning and evening horse crossings. Other communication needs can be discussed during preconstruction and orientation meetings. Swan Mountain Outfitters is encouraged to visit the project area regularly to determine if environmental changes that could startle horses have occurred at the work site.

13. **Comment:** “We [Swan Mountain Outfitters] would also request that as much of the work be done toward the end of the season or after we close (September 14, 2014) so as to minimize the impact to operations and our very short time frame in which to operate during the summer months.”

Response: As discussed with park staff and stated on pp. 17 and 19 of the EA, large-scale bridge demolition and construction will occur in the fall of 2014, beginning in late September after concessions operations have closed for the season. Smaller scale bridge completion work will occur in late summer/early fall of 2015, but will not preclude visitor access across the bridge to the Many Glacier developed area. During this time, construction work will cease in the morning and evening to accommodate two equestrian bridge crossings. All-day and half-day rides that normally cross the bridge throughout the day will require concessioner operational changes possibly including different departure locations and schedules. Please see also the response to Comment 11.

14. **Comment:** “Would it not be better to be pro-active with replacing the bridge before another rainstorm or spring runoff event damages the bridge where it is unsafe to use?”

Response: Please see p. 17 of the EA for the anticipated project timeframe. The project has been scheduled to begin in the fall after the Many Glacier Hotel and other concessions operations close for the season, because access to the hotel and the associated developed area will not be possible during bridge demolition and construction. The work also needs to occur in the fall when water levels are lowest to minimize impacts to water resources.

References

Boughton, J. 2010. Letter to Glacier National Park Superintendent.

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, socioeconomic, 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 historic structures and cultural landscapes, floodplains, water resources, wildlife, threatened and endangered species including grizzly bears, Canada lynx, and wolverines, and natural soundscapes.

Fundamental resources and values for Glacier National Park are identified in the 1999 *General Management Plan*. According to that document, all but one of the impact topics (visitor use and experience) 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 as a goal in the park's general management plan or other relevant NPS planning document.

- **Historic Structures and Cultural Landscapes** – Demolition of the Swiftcurrent Bridge will remove a contributing resource from the Many Glacier Hotel Historic District, and will have moderate, adverse impacts to historic structures and cultural landscapes. However, the project will not substantively diminish elements associated with the district that led to its listing in the National Register of Historic Places, nor will it substantively diminish elements that led to the Many Glacier Hotel's listing as a National Historic Landmark. A finding of "adverse effect" on historic structures and cultural landscapes has been determined, as defined by Section 106 of the NHPA. Although historic structures and cultural landscapes are a fundamental resource at the park, the preferred alternative will only result in moderate, site-specific to local, long-term adverse impacts to historic structures and cultural landscapes; therefore, there will be no impairment to historic structures and cultural landscapes.
- **Floodplains** – Replacing the Swiftcurrent Bridge will slightly improve the existing floodplain condition by reducing flood flow constriction caused by the existing bridge's piers and abutments, and will have only negligible to minor beneficial impacts to floodplains. Floodplains are a fundamental resource at the park; the preferred alternative will result in negligible to minor, site-specific, and long-term beneficial impacts to floodplains; therefore, there will be no impairment to floodplains.
- **Water Resources** – Limited turbidity from the removal of the Swiftcurrent Bridge's existing piers and abutments and placement of new abutments and riprap will have negligible to minor adverse impacts to water resources. Although water resources are a fundamental resource at the park, the preferred alternative will only result in negligible to minor, site-specific, and short-term adverse impacts to water resources; therefore, there will be no impairment to water resources.

- **Wildlife** – Construction activity during replacement of the Swiftcurrent Bridge could negatively affect wildlife that rely on low levels of human activity during the fall and/or are active at night, put animals crossing the Many Glacier Road at higher risk of vehicle collisions, increase the potential for wildlife to become habituated to human activity, and will have negligible to minor adverse impacts to wildlife. Although wildlife are a fundamental resource at the park, the preferred alternative will only result in negligible to minor, site-specific to local, short-term adverse impacts to wildlife; therefore, there will be no impairment to wildlife.
- **Grizzly bears, Canada lynx, and wolverines** – Replacing the Swiftcurrent Bridge could negatively affect grizzly bears, Canada lynx, and wolverines that rely on low levels of human activity during the fall, increase the potential for grizzly bears to become habituated to people, put grizzly bears, Canada lynx, or wolverines crossing the Many Glacier Road at some risk of injury or mortality from vehicle collisions, and will have minor to moderate adverse impacts to grizzly bears, lynx, and wolverines. The Section 7 determination for effects to grizzly bears and Canada lynx are “may affect, not likely to adversely affect”, and “not likely to jeopardize” for wolverine. Although grizzly bears, Canada lynx, and wolverines are a fundamental resource at the park, the preferred alternative will only result in minor to moderate, site-specific to local, short-term adverse impacts to grizzly bears, Canada lynx, and wolverines; therefore, there will be no impairment to grizzly bears, Canada lynx, and wolverines.
- **Natural Soundscapes** – Noise during replacement of the Swiftcurrent Bridge will temporarily increase the level and occurrence of human-caused noise in the project area and will have moderate adverse impacts to natural soundscapes. Although natural soundscapes are a fundamental resource at the park, the preferred alternative will only result in moderate adverse, site-specific to 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.

National Park Service
U.S. Department of the Interior

Glacier National Park
Waterton-Glacier International Peace Park
Montana

STATEMENT OF FINDINGS FOR FLOODPLAINS

Swiftcurrent Bridge Replacement

Glacier National Park, Montana

Recommended by:

ACTING FOR


Jeff Mow

Superintendent, Glacier National Park

Concurred by:

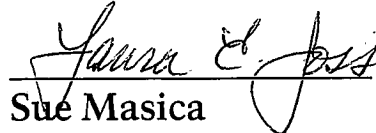


Forrest E. Harvey

Chief, Water Resources Division

4/01/2014

Approved by:



Sue Masica

Intermountain Regional Director
National Park Service

4/8/14

INTRODUCTION

Glacier National Park has prepared and made available an Environmental Assessment (EA) analyzing alternatives for replacing the Swiftcurrent Bridge, located at the outlet of Swiftcurrent Lake within the Many Glacier developed area (Figures 1 & 2). The Swiftcurrent Bridge is rapidly losing its structural integrity. The bridge deck is severely damaged and the abutments and piers are in disrepair. Ice break up in Swiftcurrent Lake results in more wear and stress to the piers and abutments. Utilities for sewer, water, phone and electricity are intertwined and partially encased in conduit alongside the deck, failing to meet code for separation and detracting from the aesthetic appearance of the bridge. Glacier National Park is proposing to replace the Swiftcurrent Bridge with a clear span bridge. Executive Order 11988 "Floodplain Management" requires the National Park Service (NPS) and other agencies to evaluate the likely impacts of actions in floodplains. NPS Director's Order #77-2: Procedural Manual 77-2: Floodplain Management provides NPS policies and procedures for complying with EO 11988 (NPS 2003). This Statement of Findings (SOF) has been prepared in accordance with the NPS floodplain management procedures.

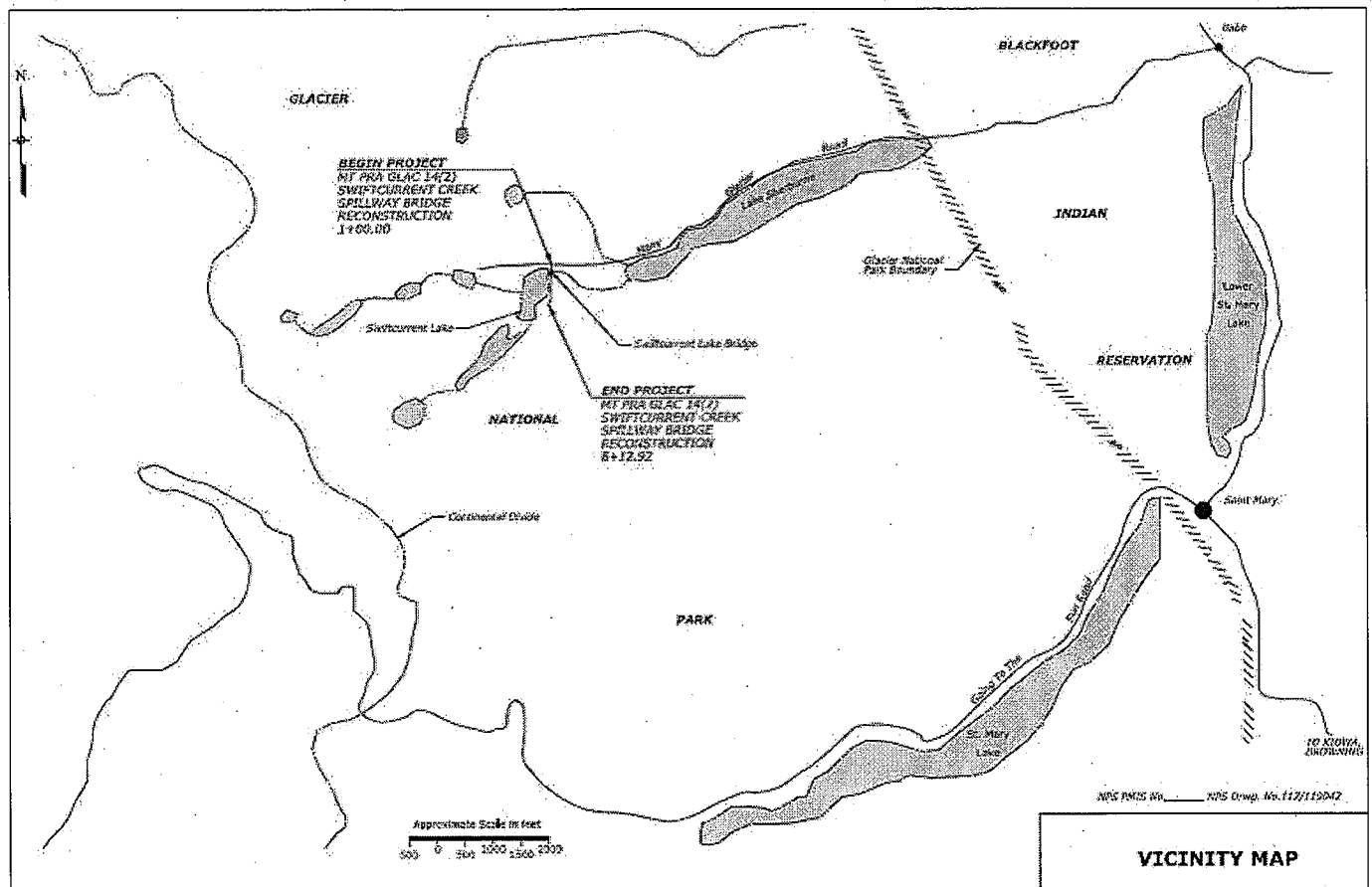


Figure 1: Swiftcurrent Bridge vicinity map, Glacier National Park, Montana.

PROPOSED ACTION

Under the proposed action, the existing 75-foot Swiftcurrent Bridge, composed of five spans and supported on four stone masonry piers, would be replaced with a 85-foot single span bridge on the existing alignment (Figure 3). New abutments would be constructed at the outer edges of the stream channel behind the existing abutments. The four interior piers and existing abutments would be removed to improve the bridge's hydraulic capacity. The new bridge would be designed to preserve to the extent possible the visual and aesthetic elements of the original historic bridge, including placement near existing elevation in order to match the existing historical profile. The new bridge would match the existing bridge width of 28 feet-8 inches, and would replicate two 9-foot lanes, a 3-foot wide sidewalk, and a 5-foot bridle path. The new abutments would be supported on deep foundations.

The existing bridge deck may be removed without the need for work crews or equipment to access the creek, but some in-water work involving hand-tools and an excavator would be required to remove the concrete piers and salvage the stone masonry, though no excavation of the lake bed would occur.

Following demolition, the abutments for the new bridge would be constructed. Because the new bridge would be longer than the existing bridge, excavation for the abutments would be behind the existing abutments. A relatively minor amount of riprap would armor and protect the abutments.

The Swiftcurrent Bridge demolition and construction work may be scheduled to occur twenty-four hours a day, seven days a week during the fall construction period of late September through the first week of December. Additional deck work, paving, and stone masonry work would occur in late summer/fall of the following season, limited to daytime hours.



Figure 2: Swiftcurrent Bridge, Glacier National Park, Montana.

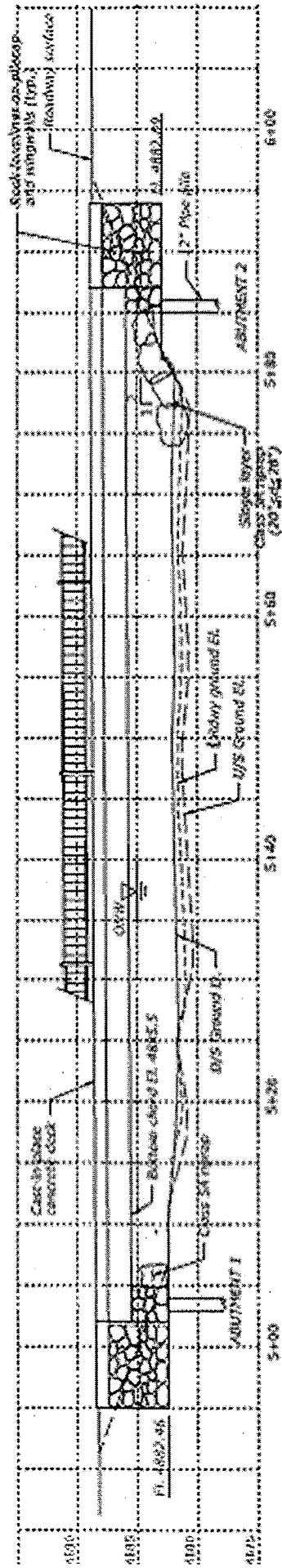


Figure 3: Preliminary design layout for the new Swiftcurrent Bridge; typical bridge section depicting elevations.

SITE DESCRIPTION

Physical Setting

The project site is located on the eastern flank of the Continental Divide at an elevation of approximately 4900 feet. The existing bridge is located at the outlet of Swiftcurrent Lake where the flow passes under the bridge and shortly thereafter transitions into a waterfall along a steep chute before reaching a plunge pool located at an elevation approximately 20 feet below the lake elevation.

The site is located approximately 11 miles southwest of Babb, Montana at a latitude of 48°47'57" and a longitude of 113°39'21". The climate of the valley is relatively mild in the summer and cold in the winter with mean monthly temperatures ranging from 59 degrees Fahrenheit in July to 13 degrees Fahrenheit in January. Average annual precipitation at Swiftcurrent Lake is about 39.6 inches per year whereas higher elevations may receive up to 6.6 feet per year. Average annual runoff for the basin is 62.4 inches.

Mast and Turk (1999) describe the geology of the basin and note, "The bedrock is very resistant to weathering and supplies little sediment to the stream." This is consistent with the history of the existing bridge at the site during which two significant floods occurred in 1964 and again in 2006 and neither one caused any significant scour or undermining of the bridge foundations or piers.

Hydrology

Swiftcurrent Creek drains approximately 31 square miles upstream of Swiftcurrent Lake. The basin consists of rugged mountainous terrain on the eastern flank of the Continental Divide. Swiftcurrent Creek is a perennial, high-gradient mountain stream which eventually flows into the St. Mary River. The basin lies within the Saskatchewan River Basin.

The U.S. Geological Survey (USGS) maintains a long-term recording station for lake levels on Swiftcurrent Lake, adjacent to the existing bridge. In addition, the USGS conducts an ongoing program of field measurements of flow immediately downstream of the lake outlet in order to maintain a stage discharge relationship. The USGS utilizes the stage discharge curve to report streamflow along with lake levels at this gaging station.

Fisheries

The entire basin upstream of the proposed project site is believed to have been historically fishless due to the waterfall located immediately downstream of the project site. This is the typical "hanging-valley" situation that developed in many of the drainages on the east side of the park as the glaciers receded. Historically, Swiftcurrent Lake has been stocked with brook trout, cutthroat trout, Arctic grayling, and rainbow trout. It currently supports introduced populations of brook trout and kokanee, although NPS records of stocking kokanee do not exist.

Sherburne Reservoir is located immediately downstream of the project area. The reservoir was formed by the construction of Sherburne Dam, located just outside of the park. The reservoir is a Bureau of Reclamation irrigation storage project. Water is stored in the winter and spring and released to irrigate farmland in eastern Montana in the summer. Construction of the reservoir inundated several miles of existing shallow lake/stream habitat. The reservoir is operated solely for water storage and release and as a result it has severe annual fluctuations in water elevations. This makes it difficult for native fisheries to reproduce successfully and recruit adults to the fishery. However, the reservoir is home to a number of native species including northern pike (*Esox Lucius*), bull trout (*Salvelinus confluentus*), mountain whitefish (*Prosopium williamsoni*), lake whitefish (*Coregonus clupeaformis*), and longnose suckers (*Catostomus catostomus*).

JUSTIFICATION FOR USE OF THE FLOODPLAIN

By nature of the intent of the project, addressing the bridge's structural concerns in a manner compatible with the historic character of the current bridge and the Many Glacier Hotel Historic District, the new bridge must be located within the floodplain.

Investigation of Alternative Sites

Given the historic character of the Swiftcurrent Bridge and its status as a contributing resource to the Many Glacier Hotel Historic District, combined with the constrictions presented by the natural and built environment in this area (between a lake and waterfall and an existing alignment surrounded by historic structures), alternatives that deviated from the existing alignment were not investigated. There are no alternative sites that would avoid having to cross Swiftcurrent Creek or Swiftcurrent Lake.

SITE-SPECIFIC FLOOD RISK

The Swiftcurrent Bridge and portions of the surrounding Many Glacier developed area are located within the 100-year floodplain of Swiftcurrent Lake. Two significant floods occurred in 1964 and 2006, both resulting in overtopping of the existing bridge and some flooding of the historic Many Glacier Hotel, which is also located within Swiftcurrent Lake's floodplain. Flooding has and could occur within the Many Glacier developed area, but there would be enough time to issue a flood warning and evacuate people to safe areas should the need arise (NPS 2004). The Many Glacier Emergency Evacuation Plan (2003) contains guidelines for managing an evacuation of the Many Glacier area, including in the event of a flood (Section 8.3).

Table 1. HECRAS Model Output for Swiftcurrent Creek Bridge, Existing and Proposed

Flow Recurrence Interval (yr)	Discharge (cfs)	Existing Bridge		Proposed Bridge		
		Water Surface Elevation (ft)	Channel Velocity at Bridge (fps)	Water Surface Elevation (ft)	Channel Velocity at Bridge (fps)	Water Surface Elevation difference* (ft)
2	1006	4885.78	8.59	4885.15	5.55	-0.63
10	1961	4887.72	8.29	4887.04	7.23	-0.68
50	3796	4890.04	9.16	4890.04	9.16	0.00
100	5032	4890.92	8.23	4890.89	8.14	-0.03
500	9632	4894.21	5.63	4894.20	5.58	-0.01

*This is the difference between the lake's surface elevation for the existing and proposed bridge. A negative value indicates a lake level decrease due to the proposed bridge relative to the existing bridge.

MITIGATION

Replacing the existing bridge with a new clear span bridge would minimally mitigate existing adverse flood hazards to developments along Swiftcurrent Lake. The removal of the existing bridge's piers would remove some restrictions to flood flows and slightly improve or maintain flood flow capacity. The new bridge has been designed for structural durability and minimal resource impacts. The new bridge would be 10 feet longer than the existing bridge, reducing floodplain impacts. In-water work would be completed during the fall at low flow periods and equipment would not be operated (driven) below the water surface elevation, but would need to

reach into the water. Equipment used in/over the water (such as excavators that may need to reach into the lake) would use non-petroleum based lubricants (e.g. vegetable oil based products) deemed safe for working in and around waterways.

SUMMARY

The preferred alternative was designed to achieve project objectives while considering the floodplain values of the area. The proposed action would maintain an existing obstacle to flood flows, but replacing the existing bridge with a clear span bridge would slightly reduce the adverse impacts on streamflow and floodplains. Due to the nature of the project (addressing the bridge's structural concerns in a manner compatible with the historic character of the current bridge and the Many Glacier Hotel Historic District), placement of the new bridge in the floodplain is unavoidable. Therefore, the NPS finds this proposed action is consistent with the policies and procedures of NPS Director's Order #77-2: Procedural Manual 77-2: Floodplain Management, which provides NPS policies and procedures for complying with Executive Order 11988.

REFERENCES

Mast, M.A., and Turk, J.T. 1999. "Environmental characteristics and water quality of Hydrologic Benchmark Network stations in the West-Central United States, 1963-95: U.S. Geological Survey Circular 1173-C, 105p.

National Park Service. 2003. Director's Order 77-2. Floodplain Management. Washington D.C.

_____. 2004. Final commercial services plan and final environmental impact statement, Glacier National Park. U.S. Department of the Interior, National Park Service, Glacier National Park, West Glacier, MT.