Finding of No Significant Impact

Thunder Creek Bridge Replacement
Ross Lake National Recreation Area

Summary

The Thunder Creek Trail in Ross Lake National Recreation Area (NRA) is one of the most popular trails in North Cascades National Park Service Complex. In October, 2003, the suspension bridge over Thunder Creek was damaged beyond repair by severe flooding. Since then, the trail has been impassable by most visitors because of the dangers of crossing Thunder Creek. This Finding of No Significant Impact documents the decision of the National Park Service (NPS) to rebuild the Thunder Creek bridge approximately 0.5 mile upstream from its former location at a site more secure from flooding. The bridge will be built using steel beams covered with wooden decking and hand rails. A 0.5 mile extension trail will be built from the former bridge to the new bridge. Trail and bridge construction will begin in spring 2005. The project should be completed by early July, in time for the summer visitor season.

Purpose and Need

The purpose of this action is to provide visitors in Ross Lake NRA with a safe, sustainable means of access to the popular Thunder Creek Trail. Renewed access to the Thunder Creek Valley from State Route 20 and Colonial Creek Campground is needed for several reasons. First, the creek is too deep and turbulent to cross without a bridge, especially during the early summer season when flows are highest due to snowmelt. The option of hiking up the untrailed, eastern side of Thunder Arm (see map attachment I) and reconnecting with the Thunder Creek Trail would cause social trail development and potentially unacceptable resource damage; it would also exclude many visitors. Access to this area would also be unsafe, because visitors would have to walk along the shoulder of State Route 20 and cross the narrow highway bridge over Thunder Arm. Finally, the Thunder Creek Trail provides the most efficient and scenic access to the backcountry from the NPS campground at Colonial Creek (Attachment I, Project Area Map). The experience of walking from a popular campground into a major old-growth forested valley is unparalled elsewhere in Ross Lake NRA.

Management Alternative Selected for Implementation

Of the three alternatives analyzed in the EA, the NPS preferred alternative (Alternative B) will be implemented. This alternative is unchanged from the description that appeared in the EA. An all-purpose (hiker and stock) bridge will be built approximately 0.5 mile south (upstream) of the former suspension bridge. The new bridge location will be much more secure from flooding. A 0.5 mile extension trail will be built from the former bridge to the new bridge. Various hand tools, small power tools, e.g., chainsaws, and a small excavator will be used to construct the trail and bridge.

The 120 foot, single-span bridge will be constructed with steel beams bolted to concrete piers. The steel structure will be covered with wooden decking and handrails. The bridge materials will be flown in via helicopter and assembled at the bridge site. A “high line” will be stretched across the creek and used to place the assembled bridge beams on the concrete piers. The bridge will be approximately 5 feet above the estimated height of a 100-year flood event. This elevated design will require construction of wooden approach ramps on both sides of the bridge to ease the angle of approach.

To create space for the new bridge, the northernmost campsite at the Thunder Backcountry Camp will be closed during construction and moved in summer 2006 to a favorable location several hundred yards to the south of its current location.

The remains of the former Thunder Creek suspension bridge, including the concrete abutment on the east bank, will be removed in summer/fall 2005 when flows are lowest. A 0.5 mile segment of the former Thunder Creek trail (leading southward along the eastern side of Thunder Creek from the former bridge to the new bridge) will be abandoned and rehabilitated.

Bridge and trail construction will begin this spring. The goal is to finish construction by July 2005, in time for the summer visitor season.

Mitigation Measures

Mitigation measures are intended to lessen the impact of management actions on the environment. The following mitigation measures will be employed during bridge and trail construction:

- The abandoned section of trail from the old Thunder Creek bridge site to the Thunder Creek campground (approximately 0.5 mile) will be closed and rehabilitated using hand tools and native materials. Responsible Division: Maintenance & Resource Mgmt.
- The new, 0.5 mile extension trail from the former bridge to the new bridge will be carefully aligned to minimize cutting of over story vegetation, large tree roots, and downed logs. Responsible Division: Maintenance
- The new bridge will be pinned and cabled to its left bank footing (bedrock) to facilitate safe retrieval from the creek in the event of damage from an extreme flood or falling tree. This will reduce risk to personnel safety during recovery and minimize the potential for permanent loss of unnatural materials into the creek during a severe flood. Responsible Division: Maintenance
- The bridge will be elevated approximately 5 feet above the estimate height of a 100-year flood event. This will minimize the risk of flood damage, especially from large woody debris entrained in the current. Responsible Division: Maintenance
- The right bank abutment will be protected from flood water undermining with a large diameter downed log that is currently blocking the bridge off-ramp. Responsible Division: Maintenance
- The bridge off-ramps will be carefully aligned to avoid impacting the roots of old-growth trees at the bridge site. Responsible Division: Maintenance
- A combination of hand tools and mechanized equipment will be used as the minimum tools to accomplish the job in this potential wilderness area. This mixed approach will (a) minimize safety risks to personnel from movement of heavy materials and equipment; (b) reduce the duration of construction disturbance in the project area; and (c) ensure completion of the project in a timely fashion to minimize impacts to visitor use of the popular Thunder Creek Trail. Responsible Division: Maintenance
- There will be no blasting during the nesting season (May through June). A “boulder buster” will be used as an alternative to blasting during nesting season. Note: a boulder buster consists of a 12-gauge shotgun shell placed into a small water-filled hole drilled into rock. The explosive energy from the shell cracks the rock using hydraulic pressure. A boulder buster generates a sound equivalent to a muffled gun shot, as opposed to traditional blasting which is thunderous. Responsible Division: Maintenance
- Helicopter flights will be staged out of the parking lot on the south side of the Colonial Creek campground to avoid flying over State Route 20 with heavy payloads. To minimize disturbance to wildlife, and to ensure visitor safety, campsites and day use facilities in the vicinity of the staging area will be closed temporarily during flights. The helicopter will remain at least 500 feet

above ground level until over the bridge construction site. The helicopter will avoid low-level flying over the southern portion of Thunder Arm and the ecologically sensitive delta and riparian zone of Thunder Creek. There will be no flights on weekends or holidays.

Responsible Division: Maintenance

Other Management Alternatives Considered in the EA

Management Alternative A. Do Not Repair the Thunder Creek Bridge (No Action Alternative; Environmentally Preferred Alternative)

This "No Action" alternative is required by NPS policies as a means for comparing the impacts of other "action" alternatives against a common baseline. Under this alternative, the bridge would not be replaced. Instead, the remaining bridge materials, including the concrete bridge abutment on the right bank and floodplain of Thunder Creek, would be removed. The 0.5 mile trail from the former bridge to Thunder Camp would be restored by removing several log-stringer bridges and trail materials including culverts and turnpike. The Thunder Creek Valley would remain accessible to hikers via several routes: (1) State Route 20 via the Panther Creek trail and 4th of July Pass; (2) from the southeast via Easy Pass on Highway 20; (3) from Park Creek Pass in the Stehekin Valley, or (4) via an unmaintained, informal approach along the east bank of Thunder Arm.

This alternative would be the environmentally preferred alternative because it would have the least biological and physical impact on the project area. This conclusion is based upon the assumption that there would be limited social trail development without a bridge. Instead, it is assumed that given terrain constraints, a small social trail would develop along the east bank of Thunder Arm to the Thunder Creek trail at Thunder Camp (a trace of trail is already present here). The impacts of this social trail, however, would result in slightly less biophysical disturbance than new trail and bridge construction. In addition, it is assumed that patterns of visitor use in the lower Thunder Creek valley would shift, with more visitors entering the Thunder Creek Valley via the 9.7 mile Panther Creek trail. Taken together, the lowered visitation from lack of formal access, and slightly reduced biophysical impacts compared to the other alternatives indicate that this would be the environmentally preferred alternative.

Management Alternative C. Retrofit the State Route 20 Bridge with an All-purpose Walkway and Construct an All-Purpose Trail along the East Bank of Thunder Arm

Instead of rebuilding a bridge across Thunder Creek, the trailhead for the Thunder Creek Trail (located on the south side of Colonial Creek Campground) would be combined with the Thunder Knob trailhead at the entrance of Colonial Creek Campground along State Route 20. The State Route 20 bridge across the Thunder Arm portion of Diablo Lake reservoir would be retrofitted with an all-purpose (hiker and stock) walkway to provide safe access to the eastern shore of Thunder Arm. The State Route 20 bridge approaches would be modified with rock and fill to widen the embankments and accommodate the all-purpose walkway. The walkway would be 10 feet wide and approximately 210 feet long with a four foot high steel barrier/handrail to protect hikers and stock from bridge traffic. A substructure of piles or shafts would be required to support the additional deck. The water depth below the bridge exceeds 30 feet at some pier locations, so fairly extensive and costly modifications to the bridge would be needed.

A new, approximately 1.5 mile trail would be constructed from State Route 20 southward along the eastern shoreline of Thunder Arm. The new trail would reconnect with the existing Thunder Creek Trail just south (upstream) of the former bridge (See Project Area Map, Attachment I). The former Thunder Creek Trail would remain open from the south side of Colonial Campground to the former bridge site, to provide visitors with a short day hike to the former bridge site. The abandoned trail along the eastern side of Thunder Creek would be closed and rehabilitated from the former bridge site to the intersection of the

new Thunder Creek Trail leading up the eastern side of Thunder Arm. This Alternative would take a minimum of three years to complete. It would be roughly four times the cost of the preferred alternative.

Alternatives Considered But Rejected

Rebuild the Thunder Creek Bridge at its Former Location
A 0.25 mile section of Thunder Creek Trail on the eastern side of the former Thunder Creek Bridge traverses the floodplain of Thunder Creek. The trail routinely floods during spring runoff and can be impassible. If the bridge were rebuilt in the same general location, future flooding could damage the bridge abutment on the right bank and possibly destroy the bridge again. The trail would also continue to flood several times a year and remain a chronic maintenance problem. Finally, the approach and abutment (now partly in the channel) on the east bank/floodplain of Thunder Creek would continue to affect floodplain processes. These disadvantages demonstrate this alternative would not meet the purpose of minimizing the risk of flood damage in the future. Therefore, this alternative was considered but rejected from further consideration.

Rebuild the Thunder Creek Bridge at a Better Location Using Native Materials
The option of felling several large-diameter, old-growth Douglas fir trees on site to build the bridge was considered because the use native materials and low-tech construction techniques are preferred in potential wilderness. This alternative, however, was considered but rejected because:

(a) the trees may have fractures or other undetectable defects that would not lend themselves to accurate engineering of major structural elements;
(b) the trees would decay fairly rapidly (20 year life expectancy) under the onslaught of pests and fungal decay; and
(c) park staffs are reluctant to cut down old growth trees to build a bridge.

Retrofit the Highway Bridge with a Pedestrian Walkway and Construct a Stock Ford Downstream of the Former Bridge
The option of (a) retrofitting the highway bridge with a smaller walkway just for pedestrians, and (b) establishing a horse ford about 150 yards downstream (north) of the former bridge site was considered but rejected for reasons of cost and logistics. Washington State Department of Transportation engineers estimate that retrofitting the bridge with a smaller, pedestrian-only walkway would cost roughly the same as an all-purpose walkway because it would still require construction of an extensive substructure. The stock ford would not be usable during high flows, so visitors with stock and trail crew operations supported by stock would not be able to cross the horse ford during most of the summer season.

Construct a Trail and Parking Lot on the Eastern Side of Thunder Arm
Under this Alternative, a new trailhead with parking for hikers and stock users would be constructed adjacent to State Route 20 on the eastern side of Thunder Arm (this location partly visible in Figure 4). Access to Thunder Arm would then be available via the trail proposed under Alternative C. This action would circumvent the problem of getting pedestrians and stock across Thunder Creek and/or Thunder Arm by moving the entire trailhead to the eastern side of the valley. This Alternative was rejected primarily because the parking area would be located on a sharp corner with limited site distances for westbound traffic. In addition, a large number of campers at Colonial Creek Campground take day hiking excursions up the Thunder Creek Trail. To access the Thunder Creek trailhead, campers at Colonial Creek would have to walk along the shoulder of State Route 20 and cross the narrow bridge over Thunder Arm. This pedestrian approach would not be safe.

Public Review

The 30-day public scoping period ended on December 10, 2004. Only two comment letters were received. One letter supported Alternative C as "the option that would best suit our backpacking use and the long term care and management of the park." The letter also cited the benefit of reduced maintenance cost of a backcountry bridge. The second letter supported Alternative B, citing (a) reduced impact to previously undisturbed old-growth forest; and (b) "a safer and more aesthetic entrance" compared to hiking across a walkway adjacent to the highway. The letter also stated that the impacts of a helicopter during construction would be acceptable provided helicopter use were "scheduled during low use times so as to cause the least impact to visitors and wildlife."

The EA was available for public comment from March 9, 2005 through April 8, 2005. The EA was sent to 53 potentially interested parties, including conservation groups, guide services, academic institutions and relevant government agencies. A news release was dispersed, and an announcement was posted on the park website. At least one local area publication, the *East Skagit County Community News* published the news release in April 2005. The EA was also posted on the North Cascades National Park web site. In addition it was entered in the NPS online public comment system (PEPC).

Ten public comment letters were received. Four of the ten commenters responded online using the NPS online public comment system (PEPC). All ten commenters favored the NPS preferred alternative. Several commenters felt that "no action" was unacceptable given their fondness for the trail. Two letters remarked upon the Thunder Creek trail as being relatively easy to hike due its moderate grade, and therefore essential to their enjoyment as active senior citizens. Several letters recognized that cost should be a consideration in choosing an alternative. No letters of comment identified additional substantive issues or potential significant impacts.

Agency Consultation

U.S. Fish and Wildlife Service (FWS)
An assessment of potential impacts to federally listed species was included in the EA. We determined that the management alternative selected for implementation "may affect, but is not likely to adversely affect" federally listed species. No harm to listed species was identified. A copy of the EA was provided to the FWS for informal consultation. The FWS concurred with this determination based on review of the EA and an April 4, 2005 phone conversation (between Dan Allen, NPS Environmental Protection Specialist and Linda Saunders, FWS Biologist).

State Historic Preservation Officer and the Tribes
The new bridge and trail will not affect potentially important historic elements of the route up Thunder Creek. In addition, the former Thunder Creek suspension bridge was constructed in 1974 and was not a historic structure. No prehistoric archeological resources have been identified in the project area although fairly extensive surveys were conducted. Therefore ground disturbance associated with trail and/or bridge construction should not be impact archeological resources. In light of these considerations, impacts to cultural resources were dismissed from detailed analysis in the EA, and consultation was not pursued with the State Historic Preservation Officer or the Tribes. However, should culturally significant resources be discovered during construction, work would cease pending further evaluation of cultural significance in consultation with appropriate agencies and tribes.

Washington Department of Fish and Wildlife (WDFW)
The Washington Department of Fish and Wildlife (Mark Downen, Inland Fisheries Biologist) was consulted regarding potential impacts to bull trout (federally Threatened) from bridge construction.

WDFW personnel have extensively surveyed for bull trout in Thunder Creek. Their data and professional opinion indicate that (a) bull trout may be present in the Thunder Creek drainage although they have yet to be documented, and (b) the alternatives evaluated in this EA would not adversely affect bull trout given the negligible amount of disturbance to aquatic habitat from bridge construction.

WDFW reviewed the EA and concurred that Alternative B is the most appropriate course of action in terms of cost, impacts and logistics. They also determined that bridge construction requires a Hydraulic Project Authorization (HPA) before proceeding. NPS staffs performed a site visit with WDFW (Brendan Brokes, Area Habitat Biologist) on March 30, 2005. During that site visit, the bridge site was evaluated for stability from flooding and the proposed construction methods were discussed in relation to potential impacts to fish and their habitat. Based upon that site visit, WDFW supports the proposed action and the mitigation measures that will be employed to minimize impacts to fish habitat. An HPA for bridge construction is pending.

Seattle City Light (SCL)
SCL (Martin Hansen) reviewed the EA and commented on the potential need for a bridge to withstand winds exceeding 100 mph based upon wind velocity data collected in the Skagit Gorge "wind tunnel". Such wind velocities should not be a design concern for the proposed new bridge given its location. Specifically, the Thunder Creek valley is relatively small and isolated from the main portion of the Skagit Gorge. It does not appear to be as strongly affected by the local topographic influences (funneling of mountain valley winds; minimal surface friction due to open water) that may contribute to high winds in the Skagit Gorge. In addition, the surface friction from tall forest canopy that surrounds the site of the new bridge should protect the bridge from high winds above the forest canopy. In light of these factors, the NPS does not believe that the bridge design should be modified to accommodate excessively high winds. However, high winds could indirectly impact the bridge by felling large trees. Though tree damage is a valid concern, the NPS believes the risk is acceptable.

SCL also suggested the NPS consider using plastic wood for decking and handrails due to reduced maintenance costs and potential aesthetic considerations. The bridge design requires that some of the bridge decking to also function as structural support for the handrails, so dimensional wood timbers (with rot resistant properties) are needed because plastic/composite wood materials are not generally available for structural applications. The NPS considered using plastic decking where it would not require a structural application. However, this design modification was rejected because mixing materials would be problematic for construction due to differing material thicknesses.

Washington State Department of Transportation (WSDOT)
The WSDOT (Lee Conrad, Mount Baker Area Operations Manager) was consulted in November 2004 to determine the feasibility and cost of retrofitting the highway bridge over Thunder Arm with a pedestrian and stock walkway. WSDOT personnel provided a pro bono cost estimate for retrofitting the highway bridge, along with input on public safety concerns.

U.S. Forest Service (USFS)
The USFS (Peter Wagner, Engineer) provided the NPS with a site specific design for the bridge. His design considered an analysis of the 100-year flow in Thunder Creek, so that the risk of impact to the bridge from future flooding would be minimal.

U.S. Geological Survey (USGS)
The U.S. Geological Survey (Darrin A. Miller, Team Leader Sedro-Woolley Field Unit) was contacted in November 2004 regarding operation of the stream flow gauging station on Thunder Creek. The USGS provided input on design of the bridge. They also commented on other safety/operational concerns regarding calibration of the gauging station.

Why the Selected Alternative will not have a Significant Effect

- Negligible short-term impact to water quality during construction of trail and bridge. Possible minor, short-term impact to water quality and hydrology if the bridge were destroyed in the future. Minor, beneficial impact to the hydrology of Thunder Creek from removal of former bridge.

- Minor adverse impacts on vegetation from construction of 0.5 mile new trail and bridge (0.5 acres of physical disturbance).

- Adverse impacts to wildlife from construction would be negligible to minor and short-term. Some wildlife inhabiting the previously undisturbed forest where the extension trail will be built could experience long-term, negligible adverse impacts from displacement.

- May affect, not likely to adversely affect federally listed species. No net loss of core a grizzly habitat.

- Short term, minor to moderate adverse impacts to visitors from construction-related disturbance. Long-term, moderate beneficial impact to hikers in Ross Lake NRA. Negligible beneficial affect on stock users.

- Minimal risk of future damage to new bridge from severe flooding or falling trees.

- Beneficial impact on trails maintenance efficiency with continued stock support. Beneficial impact on ranger staffs with reduced potential for visitors getting lost or injured while attempting to cross the creek without a bridge. Beneficial impact on USGS hydrologists due to ease of gauging station calibration.

- Other CEQ significance criteria are not triggered, including:
    - Public health and safety are not compromised;
    - No unique characteristics or ecological critical areas in the geographic area are impacted;
    - The potential effects to the quality of the human environment are not highly controversial;
    - There are no significant indirect or cumulative effects or connected actions foreseen;
    - No unique or unknown consequences or uncertain effects will occur; and
    - No violation of federal, state, or local law will result from implementing the alternative selected.

Impairment

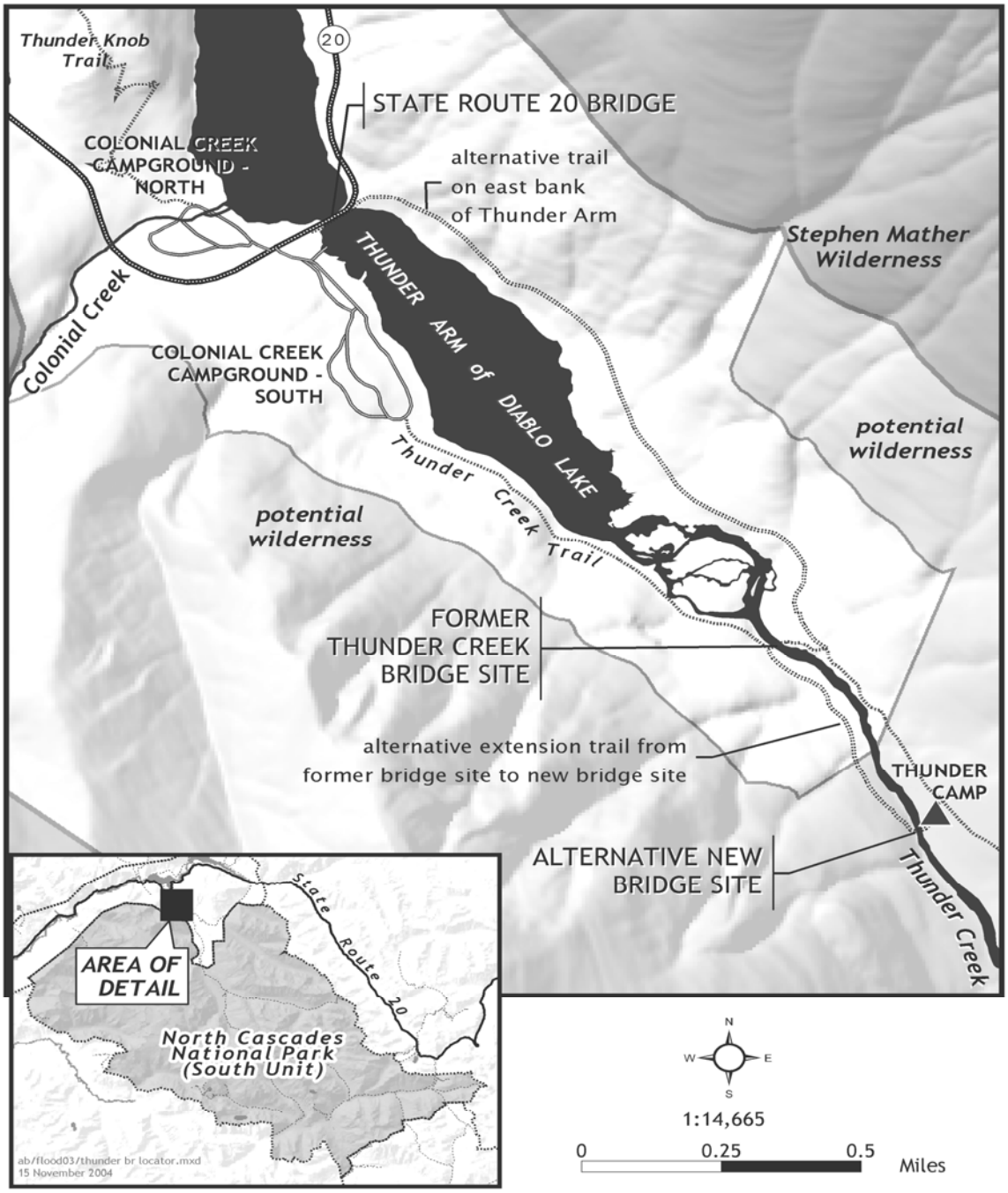
The impacts resulting from the selected alternatives will not impair NRA resources necessary to fulfill specific purposes identified in the enabling legislation. The impacts documented in the EA as summarized above will not affect resources or values key to the natural or cultural integrity of the recreation area or alter opportunities for enjoyment of the recreation area. The alternatives will not impair NRA resources and will not violate the NPS organic Act.

Conclusion

Based on information contained in the Environmental Assessment as summarized above, the National Park Service has determined that the proposed actions do not constitute a major federal action that would significantly affect the quality of the human environment. This determination is based upon the environmental analysis, the ability of the mitigation measures to reduce or eliminate impact, and the favorable nature of public comment on this project. The proposed action is not without precedent, nor is similar to an action which normally requires an environmental impact statement. Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), an environmental impact statement will not be prepared. This project will serve to ensure the long-term enjoyment of the Thunder Creek Valley by visitors with minimal adverse impacts on the human environment.

Recommended: /s/ *William F. Paleck* *4-21-05*
William F. Paleck Date
Superintendent, North Cascades National Park Service Complex

Approved: /s/ *Patricia L. Newbacher* *4/25/05*
for Jonathan B. Jarvis Date
Regional Director, Pacific-West Region


Thunder Knob Trail
20
STATE ROUTE 20 BRIDGE
COLONIAL CREEK CAMPGROUND - NORTH
alternative trail on east bank of Thunder Arm
Stephen Mather Wilderness
THUNDER ARM of DIABLO LAKE
Colonial Creek
COLONIAL CREEK CAMPGROUND - SOUTH
potential wilderness
Thunder Creek Trail
potential wilderness
FORMER THUNDER CREEK BRIDGE SITE
alternative extension trail from former bridge site to new bridge site
THUNDER CAMP
ALTERNATIVE NEW BRIDGE SITE
Thunder Creek
AREA OF DETAIL
State Route 20
North Cascades National Park (South Unit)
ab/flood03/thunder br locator.mxd
15 November 2004
N
W
E
S
1:14,665
0
0.25
0.5
Miles