U.S. Department of Transportation
Federal Highway Administration

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Western Federal Lands Highway Division
Vancouver, Washington

Suiattle River Road Project
WA FS ERFO 071-2023
Amended Environmental Assessment

August 2012

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Suiattle River Road Project
Snohomish County, WA
Amended Environmental Assessment

WA FS ERFO 071-2023

Submitted
Pursuant to Public Law 91-190
National Environmental Policy Act

U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division

Cooperating Agency
U.S. Department of Agriculture Forest Service
Mount Baker-Snoqualmie National Forest

8/9/2012
Date Approved

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TABLE OF CONTENTS

Page

Page

Page

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LIST OF ABBREVIATIONS

AASHTO – American Association of State Highway and Transportation Officials
ACHP – Advisory Council on Historic Preservation
ACS – Aquatic Conservation Strategy
ADT – Average Daily Traffic
A-EA – Amended Environmental Assessment
APE – Area of Potential Effect
ARRA – American Recovery and Reinvestment Act of 2009
ATM –Suiattle Access Travel Management Plan
BMP – Best Management Practices
BMU – Bear Management Units
CE – Categorical Exclusion
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
CWA – Clean Water Act
dB – Decibels
dbh – Diameter breast height
DNR – Department of Natural Resources
EA, A-EA – Environmental Assessment/Amended Environmental Assessment
EPA – U.S. Environmental Protection Agency
ERFO – Emergency Relief for Federally-Owned Roads
ESA – Endangered Species Act
FEIS – Final Environmental Impact Statement
FHWA – Federal Highway Administration
FONSI – Finding of No Significant Impact
FOS – Factor of Safety
FR – Federal Register
FR # – Forest Road #
FSR – Forest Service Road
GPS – Global Positioning System
HGM – Hydrogeopmorphic Classification System
ID – Interdisciplinary Team
IRA – Inventoried Roadless Area
MA – Management Area
MAPS – Monitoring Avian Productivity and Survivorship
MBS – Mount Baker Snoqualmie National Forest
MIS – Management Indicator Species
ML – Maintenance Level
MOA – Memorandum of Agreement
MP – Milepost
MPH – Miles Per Hour
MSEW – Mechanically Stabilized Earth Wall
NAAQS – National Ambient Air Quality Standards
NCD – Northern Continental Divide
NCDE – Northern Continental Divide Ecosystem

NEPA – National Environmental Policy Act
NF – National Forest
NHPA – National Historic Preservation Act
NMFS – National Marine Fisheries Service
NRHP – National Register of Historic Places
NTU – Nephelometric Turbidity Units
OHW – Ordinary High Water Mark
OSHA – Occupational Safety and Health Administration
PCE – Primary Constituent Elements
PCT – Pacific Crest National Scenic Trail
RCA – Resource Conservation Area
RM – River Mile
ROD – Record of Decision
ROS – Recreation Opportunity Spectrum
RV – Recreational Vehicle
SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEE – Social, Economic, and Environmental Team
SHPO – State Historic Preservation Officer
SR – Suiattle River Road / FR 26
SRBF – Salmon Recovery Board Fund
SUP – Forest Service Special Use Permit
TMDL – Total Maximum Daily Load
USACE – United States Army Corps of Engineers
USC – United States Code
USDA – United States Department of Agriculture
USFS – U.S. Forest Service
USFWS – U.S. Fish and Wildlife Service
USGS – United States Geological Survey
WAC – Washington Administrative Code
WFLHD – Western Federal Lands Highway Division
WSRA – Wild and Scenic Rivers Act

1 Chapter 1 – Introduction

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in partnership with the Mount Baker Snoqualmie National Forest (MBS or Forest Service) of the United States Department of Agriculture Forest Service (USFS), proposes to repair sections of Suiattle Road (SR) that were damaged in flood events in October 2003 and again in the fall and winter of 2006 and 2007.

The Suiattle River, a tributary of the Sauk River, lies west of Glacier Peak. The proposed project is located in the Suiattle River drainage (Township 33N, Range 10E, Sections 13, Township 32N, Range 11E, Sections 9,10,11 and Township 32N, Range 12E, Section 14 and 24, Willamette Meridian, Snohomish County) on the Darrington Ranger District of the MBS in the state of Washington.

This Amended Environmental Assessment (A-EA) analyzes the environmental effects of repairing Forest Service Road 26 (Road 26; known locally as the Suiattle Road), which was damaged during severe flood events in October 2003 (3 sites) and again in the fall and winter of 2006 and 2007 (5 sites), as well as addresses and adds comments from the March 2012 public release of the Environmental Assessment. (For more information about the history of Road 26 and past flood damage, see Appendix A).

Flood waters eroded sections of the valley terrace on which Road 26 was located, resulting in partial and complete loss of portions of the road, and rendering the road impassable for motorized vehicle traffic. The initial three damaged sites of the current proposed action were analyzed in the 2006 Suiattle Road 26 Environmental Assessment (USFS March 1, 2006) (2006 EA) and the subsequent Suiattle Road 26 Finding of No Significant Impact (USFS March 30, 2006) (FONSI). Damage from 2006 at MP 12.6 to MP 14.4 was analyzed in CATEGORICAL EXCLUSION for WA FS ERFO 2007(1)-20(17) Suiattle River Road Emergency Repairs Project (FHWA April 2010) (CE). In 2011, three parties raised concerns with the proposed repairs at MP 12.6 to MP 14.4, which resulted in the 2010 CE being withdrawn, and the contract for the repairs at MP 12.6 to MP 14.4 terminated.

This A-EA assesses all eight flood damaged sites from both 2003 and 2006/2007 Suiattle River floods. Damaged sites on FR 26 are located at mileposts (MPs) 6.0, 12.6, 13.0, 13.4, 14.4, 20.8, 20.9, and 22.9. These mileposts are measured from the beginning of the road at its intersection with State Highway 530. The Forest Service and Federal Highways propose to restore vehicle access on FR 26 within the Suiattle River drainage.

This proposed project is being developed as a permanent repair through the Emergency Relief for Federally-Owned Roads (ERFO) Program of the FHWA Public Lands Highway Program, which is financed by the Federal Highway Trust Fund. FHWA is the lead agency in addressing National Environmental Policy Act (NEPA) compliance for this road repair. FHWA also provides technical support and construction services, which include roadway design, obtaining permits, issuing a construction contract and administering the actual road construction. The project is expected to occur over a single construction season beginning in the spring 2013. The USFS is a cooperating agency under NEPA.

Typically, permanent ERFO funded repairs are made within two fiscal years of damage at a site. The 2003 flood damage at MP 14.4, 20.9 and 22.9 was under contract for repair when the 2006 and 2007 flood waters damaged additional sites. Subsequently, the road repair contract for the 2003 flood sites was terminated due to lack of access. The Forest Service submitted the new road damage sites for ERFO funding and was granted an extension for the 2003 damaged sites. All of the sites (from both 2003 and 2007 floods) required field surveys, consultation and environmental review during 2007 to 2009. A

Categorical Exclusion (CE) was completed by the Western Division of Federal Highways Administration in 2010 and a contract was awarded for the road repair work from MP 12.6 to 14.4. Additional tree felling at the MP 14.4 reroute (under contract when the 2006 floods hit) was initiated in September of 2010. The FHWA 2010 repair contract was terminated in May of 2011 with the FHWA withdrawal of the CE. An extension under ERFO has been approved for the repair contract award through 2013.

The initial assessment of repairs and the estimated funding required to repair the flood damaged areas was determined and documented through the FHWA's Damage Survey Reports (located in the Project Record). The ERFO program provides funding for reconstruction of roads that have suffered damage because of a natural disaster over a wide area, or from a catastrophic failure.

1.1 Suiattle River Road/ FR 26 Background

Road 26 is part of a high-use, multi-season administrative and recreation route on the Darrington Ranger District of the MBS National Forest (Figure 1). The first 10 miles of Suiattle Road 26 is a paved double-lane road; the last 13 miles are a single lane, gravel-surface road with turn-outs. The Forest Plan reports the Suiattle Road 26 as a major arterial road, with heavy traffic of mixed vehicle types, having a high priority for safety, and a road surface that is stable. Road 26 provides vehicular access to State and private lands, Tribal allotments, two Sauk-Suiattle tribal cemeteries, and national forest lands.

The Suiattle Road 26 is a major recreational portal to the Glacier Peak Wilderness and the Pacific Crest National Scenic Trail (PCT). At 576,000 acres, Glacier Peak is the largest National Forest Wilderness in the Pacific Northwest and one of the most ruggedly beautiful. It extends from the dry piney shores of Lake Chelan across the glacier capped summits of the Cascade Crest and down through dense damp old growth forested valleys on the west. The wilderness forms the core of a 2.6 million acre wilderness complex covering much of the North Cascade Range - one of the wildest areas of the lower 48 states. Some of the true icons of the entire Wilderness System are accessed by Suiattle Road 26 including Miners Ridge and the Ptarmigan Traverse which ends at Downey Creek.

The importance of this portal to hikers and equestrian users is high due to the interconnected system of trails which are afforded by the Suiattle Trail #784. With the recent decommissioning of the upper portion of White Chuck River Road (FR 23) and loss of the White Chuck Trail, and the upcoming decommissioning of the Illabot Road 16, access to the wilderness, provided by Suiattle Road 26 will take on an even greater role in the future. The Suiattle Trail #784 not only connects to the PCT, but is unique in that it provides backcountry travelers many options for loop and long distance trips through the wilderness and beyond. Via the PCT and other trails, travelers can head north over Suiattle Pass to the community of Stehekin at the head of Lake Chelan, east over Cloudy Pass to Holden Village, and southeast over Buck Creek Pass to Trinity. With future planned repairs to Milk Creek Trail, a popular loop from the Suiattle Trailhead through the high country north of Glacier Peak would once again become possible.

Suiattle Road 26 also provides roaded access to the Green Mountain Trailhead. Beginning at an elevation of 3,500 feet, the Green Mountain trail quickly takes hikers into high alpine meadows with spectacular vistas. The trail ends at the popular Green Mountain Fire Lookout.

Two popular concession operated campgrounds are accessed by Suiattle Road 26: Buck Creek (MP 15.5) and Sulphur Creek (MP 23). Access to these campgrounds was cut off by the flood events of 2003 and 2006. A Forest Service rental cabin just beyond the Buck Creek Campground has also not been available for use since 2006. Commercial outfitter guides use Suiattle Road 26 to provide rafting adventures on the

Suiattle River, and Road 26 is used by the public for water access for their boats, rafts, and kayaks. Road 26 provides driving for pleasure and scenery. The road provides access during the spring and fall for gathering wild mushrooms, and the summer months for picking wild berries as well as other forest products. During the winter, the Suiattle Road provides low-elevation access for scenic driving, backcountry skiing, snowmobiling, and snow play. Hunting game and fishing are also popular seasonal pastimes. Due to the high recreational use, the MBS Forest-wide Roads Analysis (USDA Forest Service 2003) identified the Suiattle Road 26 as a ***High Need*** road for recreation and current operational maintenance level is for road conditions useable by all vehicle types with moderate comfort and convenience. Local Tribal representatives have also identified areas within the Suiattle River drainage that are important for traditional use with motorized access greatly enhancing access by tribal elders and youth (Darrington District records).

Road 26 also provides vehicle access for Forest Service administrative management and maintenance of campgrounds, trails, recreation sites, and other facilities. The Forest Service uses Green Mountain Horse Pasture as an administrative site and project heliport. Motorized access on Road 26 allows Forest Service law enforcement officers, fire prevention patrols, and other personnel to provide public safety, regulatory compliance, and maintenance of National Forest recreational sites and roads.

Note: There were two environmental assessments involving Road 26 in the Suiattle River drainage proceeding in 2012. The Mt. Baker-Snoqualmie National Forest was finalizing an Environmental Assessment on the road management in the Suiattle (Suiattle Access and Management or Suiattle ATM EA) and Federal Highways was preparing an Environmental Assessment on repair options for eight flood damaged sites on Road 26. The Forest ATM EA analyzed options on what roads would be retained in the forest road system as open for recreation and administrative use, and what roads would be closed or decommissioned within the Suiattle River drainage. All alternatives in the Forest Suiattle ATM EA retained Road 26 for passenger vehicles to the terminus. The Suiattle ATM Decision Notice and Finding of No Significant Impact (DN and FONSI) was signed in February 2012, and was in the 45 day appeal period (February 10th to March 26th) when the Federal Highways' Suiattle River Road Project EA (WA FS ERFO 071-2023) was released in March of 2012.

There was one appeal of the Suiattle ATM EA DN and FONSI; the Darrington District Ranger met with the appellant in April of 2012, with no resolution of the appeal. The appeal and project record was then submitted to the Regional Office of Region 6 of the USDA Forest Service in Portland for review and recommendation on the decision. The Appeal Reviewing Officer affirmed the Darrington District Ranger's decision in a letter dated April 18, 2012.

During the appeal period and resolution period, the Federal Highways' Suiattle River Road Project EA was released. The EA included a No Action alternative and two repair options. The No Action would result in no repairs to the flood damage sites at this time, but would not change the status of the road as part of the desired road system. Alternative B would repair all eight flood damaged sites to the terminus, with Federal Highways emergency relief funds. Alternative C would repair the first five flood damaged sites with emergency relief funds from federal highways, with road use beyond the junction of Roads 26 and 2680 determined in a Forest decision with site specific information from the Suiattle River Road Project.

A history of the Road 26 is provided in Appendix A and is on the Mt. Baker-Snoqualmie Forest website at http://www.fs.usda.gov/detail/mbs/landmanagement/projects/?cid=stelprdb5298299. See "Suiattle River Road 26" listed under the top heading "Projects," in the center of the page.

1.2 Need for Proposed Action

The 2003, 2006 and 2007 floods caused damage to Suiattle Road 26 at eight different sites. Portions were partially or completed washed out by the Suiattle River making the road impassable to motorized vehicle traffic. There is a need for safe motorized vehicle access for administrative, recreational and tribal cultural use within the Suiattle River drainage. The access requires managing the transportation system at the minimum standard needed to support planned uses and activities while providing for public safety (Forest Plan p. 4-7). The road in its current damaged condition limits access in case of forest fire, does not provide vehicle access to traditional recreational areas, and limits access for traditional tribal cultural events.

Purpose: The purpose of the proposed action is to restore safe motorized access within the Suiattle drainage, which includes:

- Access suitable for passenger automobiles to recreation opportunities;
- Access for Forest Service administration of recreation sites and infrastructure;
- Access to State and private lands for management and use of those lands; and
- Access for Tribes to tribal lands, traditional gathering and use areas, and to the Sauk-Suiattle Tribal cemeteries.

1.3 Relationship to Forest Plan and Other Documents

The proposed action tiers to the Final Environmental Impact Statement (FEIS) for the Mt. Baker-Snoqualmie Land and Resource Management Plan (USDA Forest Service 1990), as amended. Major amendments include:

- FEIS on Management of Habitat for Late Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl, as adopted and modified by the April 1994 Record of Decision (1994 ROD), which provides additional standards and guidelines (referred to as the "1994 ROD");
- Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl to Clarify Provisions Relating to the Aquatic Conservation Strategy (March 2004);
- Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA Forest Service, USDI Bureau of Land Management 2001); and
- Record of Decision for the Pacific Northwest Region Invasive Plant Program: Preventing and Managing Invasive Plants (USDA FS 2005).

The 1990 Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan (as amended) provide management direction for National Forest System lands within the project area. Direction is

provided in the form of goals, objectives, and Forest-wide standards and guidelines (S&G) and Management Area (MA) prescriptions.

Note: The 1994 major amendment to the Forest Plan is referred to as "the 1994 ROD."

1.3.1 Land Allocations

The 1994 ROD land allocations amend the allocations described in the 1990 Forest Plan. There is considerable overlap among some allocations, more than one set of standards and guidelines may apply. In addition, where the standards and guidelines of the 1990 Forest Plan are more restrictive or provide greater benefits to late-successional forest-related species than do those of the 1994 ROD, the existing standards and guides apply.

The 1994 ROD and the 2001 and 2004 amendments include additional forest-wide standards and guidelines. All guide management of this National Forest. The Suiattle road repair sites are located within the following land allocations:

Site #1 at Mile Post 6.0 is on State lands, managed by Department of Natural Resources, within a Forest Service Road easement. All damage sites on the National Forest (Sites #2 to #8) are within Riparian Reserve and the Suiattle River segment of the Skagit Wild and Scenic River system.

1.3.2 Riparian Reserve

These areas are along rivers, streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. Riparian Reserve standards and guidelines apply and are added to the standards and guidelines of other designations. Applicable standards and guidelines for Road Management activities that pertain to this proposed action are described in Chapter 3 (USDA, USDI 1994, pp. C-1, 32-33).

1.3.3 Skagit Wild and Scenic River, Scenic River (Matrix)

Management Area 6, Skagit Wild and Scenic River, Scenic River

The Skagit Wild and Scenic River System, established by Congress in 1978 (PL 90-625), includes 158.5 miles of the Skagit and its tributaries—the Sauk, Suiattle, and Cascade Rivers. Management of the Skagit River System is to maintain or enhance: 1) free-flowing characteristics and water quality of the rivers, and 2) the outstanding, remarkable values for which the river was placed into the federal system: wildlife, fish, and scenic qualities (USDA Forest Service 1983, Vol. II, p. 4). The Skagit Wild and Scenic River is considered part of the matrix, as timber harvest is allowed in recreation and scenic segments.

1.3.4 Relevant Goals, Standards and Guidelines

The following includes goals, standards and guidelines from the Forest Plan, as amended, which are applicable to the repair of Road 26. However, for all applicable goals, and standards and guidelines that apply; refer to the Forest Plan, as amended plus the River Management Plan, Final Skagit River (which is incorporated into the Forest Plan) for the complete list.

Roads Management (from USDA Forest Service 1990, and USDA, USDI 1994)

- ***Goal:*** Build and maintain transportation system facilities to the minimum standard needed to support planned uses and activities (1990, page 4-7).
- ***Goal:*** Manage the transportation system at the minimum standard necessary to provide for public safety (1990, page 4-7).

- ***Goal:*** Provide and manage roads required to protect and manage the Mt. Baker-Snoqualmie National Forest (1990, pp. 4-7 and 4-140).
- ***Forest-wide Standard/Guideline, Construction:*** Roads will be designed, constructed, and/or reconstructed according to standards appropriate to planned uses, activities, safety, economics, and impacts on land and resources, using criteria in FSM 7700 and 7720, or as revised (1990 page 4-140).

Key Watershed Standards and Guidelines (from USDA, USDI 1994)

- Outside Roadless Areas, reduce existing system and non-system road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds (1994, p. C-7).
- Key Watersheds are highest priority for watershed restoration (1994, p.C-7).

Riparian Reserve Standards and Guidelines for Roads Management

- ***RF-1:*** Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives (1994, p. C-32).
- ***RF-2:*** For each existing or planned road, meet Aquatic Conservation Strategy objectives by: a) minimizing disruption of natural hydrologic flow paths, including diversion of stream-flow and interception of surface and subsurface flow (1994, p. C-32), and b) restricting side-casting as necessary to prevent introduction of sediment to streams (1994, p.C-32).
- ***RF-3:*** Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by: a) reconstructing roads and associated drainage features that pose substantial risk (1994, p. C-32), and b) prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected (1994, p.C-32).
- ***RF-4:*** Culverts, bridges, and other stream crossings…shall accommodate at least the 100-year flood, including associated bed-load and debris…Crossings will be constructed and maintained to prevent diversion of stream-flow out of the channel and down the road in the event of crossing failure (1994, p. C-33).

Wild and Scenic Rivers (from USDA Forest Service 1983/1984 (ROD) and 1990)

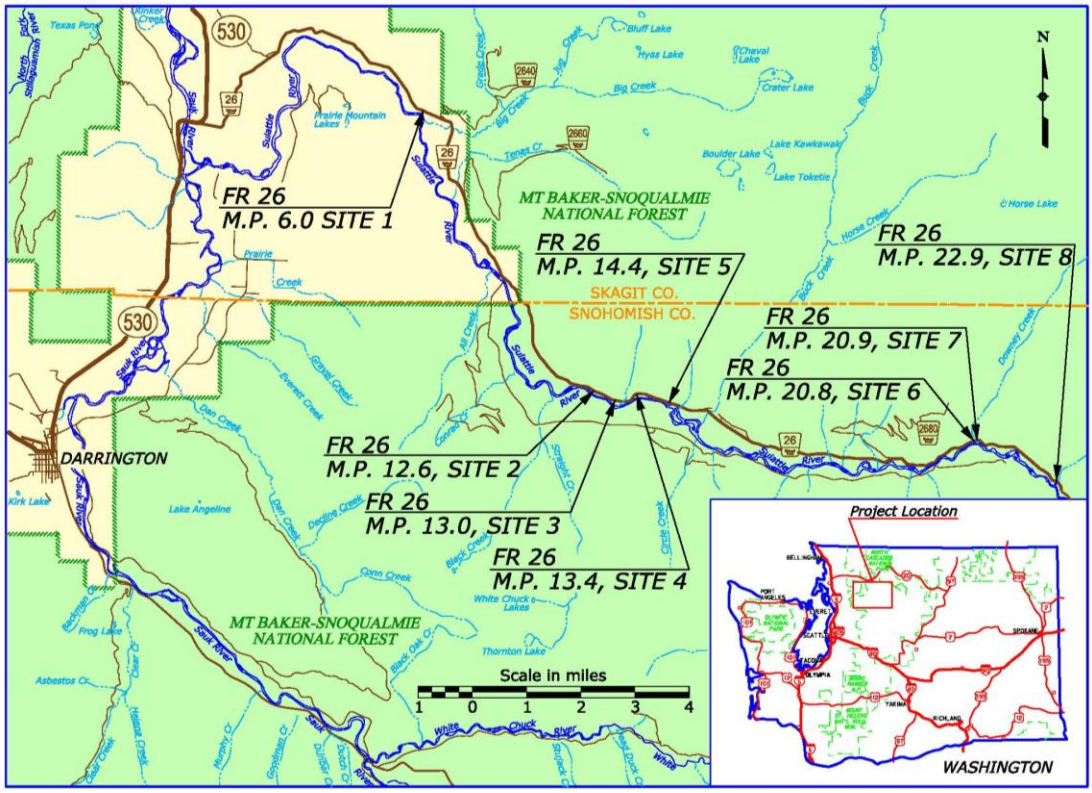
- ***Goals:*** Provide opportunities for public access and use of the rivers while providing for rights of adjoining private landowners (1990, pp. 4-7).
- ***Maintain a leadership role*** in protecting designated Wild and Scenic River values (1990, page 4-7).
- ***Goal E:*** Final Skagit River, River Management Plan, Vol. II: Provide for public access to and along the banks of the…rivers, consistent with other resource capabilities, and the 1982 Interagency Guidelines (1983, Vol. II, p. 6).
- ***Goal H:*** Protect and maintain wildlife habitat (1983, Vol. II, p. 6).
- ***Goal I:*** Protect and enhance fish habitat (1983, Vol. II, p. 6).
- ***Goal N:*** Protect or improve present water quality (1983, Vol. II, p.6).
- ***Goal O:*** Maintain and enhance free-flowing characteristics of the rivers (1983, Vol. II, p.6).

- ***Maintain or enhance*** the recreation, visual, wildlife, fisheries and water quality values of the existing and recommended wild, scenic, and recreational rivers (1990 pp. 4-95).
- ***Floodplains Management Direction Recreational and Scenic Rivers (R&S)-5***[1]***:*** Federal agencies will not participate financially, either directly or indirectly, in any bank stabilization project which threatens the visual or free-flowing characteristics of classified rivers until each project has been judged on its own merit through the Environmental Assessment process (1983, Vol. II, p.16).
- ***Floodplains Management Direction R&S-8:*** Rip-rapping with natural appearing rock along the shoreline to preserve and protect investments existing since 1978 shall be acceptable providing that there are no other viable alternatives to the proposed action, short of abandonment. All riprap projects should be promptly revegetated with native or naturalized plant material (1983, Vol. II, page 16).
- ***Transportation-Utility Management Direction R&S 9:*** Reconstruction of those roads existing as of November 10, 1978 will assure the reconstruction will not decrease the values in existence at that date of classification (1983, Vol. II, page 55).
- ***Fisheries Management Direction R&S 3:*** Priority will be given to all management decisions that protect or enhance existing fishery values (1983, Vol. II, page 53).
- ***Water Quality Management Direction R&S 4:*** Place special emphasis on protecting streamside vegetation (1983, Vol. II, page 54).
- ***Water Quality Management Direction R&S 5:*** Give priority to protection of water quality in cases of conflict between water quality and other resource uses. Prevent alteration of natural channels or stream banks that would significantly affect (1) the free-flow of water, (2) the appearance of the stream, (3) fish habitat, or (4) water quality (1983, Vol. II, p.54).

Other relevant direction and laws pertinent are listed in Appendix B.

[1] *Management Direction R&S applies to Recreation and Scenic Rivers, Skagit River Final River Management Plan, Vol. II, 1983.*

Figure 1. Vicinity Map



1.4 Proposed Action Scoped with Public and Tribes

The Darrington District and Federal Highways Administration propose to restore vehicle access in the Suiattle drainage by repairing and/or rerouting the road at the eight flood-damaged sites along Road 26. Where possible, new repairs would be located farther away from the Suiattle River to avoid future road washouts due to high flood events. The proposed action would also abandon and obliterate sections of Road 26 with over 1 mile of road rehabilitated within the floodplain that would reconnect riverine wetlands with upland flows.

Actions Common to all Sites: Temporary by-passes and undamaged portions of Road 26 would be used to access the repair sites. The MP 13.3 by-pass would need maintenance to allow equipment access to the MP 14.4 and beyond. Hazard trees along the work route would be assessed and removed if needed to meet safety requirements of the Occupational Safety and Health Administration (OSHA). Temporary erosion and sediment control measures would be installed prior to beginning ground disturbing activities. Rock or road fill would be both purchased from commercial sources and conserved during construction and reused. The existing Green Mountain Pit at MP 2.4 of Road 2680 and the All Creek Pit at MP 0.1 of Road 2510 would be utilized as waste areas. Surfacing materials and any additional rock would come from commercial sources. Certified weed-free mulch would be used on disturbed ground, along with hydro-seeding on new cut and fill slopes.

Details of the proposed action are listed below with a photograph of the damaged site and a description of the proposed repairs at that site. Sites are identified with a site number (#1 to #8), milepost location and legal description.

Site #1, Milepost 6.0 (T33N, R10E, Section 18). The river during high flow events has steadily eroded the base of the slope, causing land sliding of the slope and terrace edge. The proposed action would repair the Suiattle Road 26 at Site #1 (Figure 2) by rerouting the road for approximately 2500 feet, with the realignment 375 feet to 400 feet inland from the eroded Suiattle River bank. The existing damaged section of Road 26 and temporary bypass would be abandoned, excavated and rehabilitated and portions may be used as mitigation for impacts to associated wetlands. Culverts would be removed and wetland areas reconnected to the active Suiattle River floodplain.

Figure 2a. Photograph of Site #1 View from west to east

Figure 2b. Photograph of Site #1 View from east to west

Site #2, Milepost 12.6 (T32N, R11E, Section 9). The Suiattle River moved into the hillside at Site #2 and washed out about 800 feet of roadway (Figure 3). The proposed action would reconstruct the road for approximately 1200 to 1300 feet above the washout, with an offset of approximately 50 to 70 feet from the existing road. The existing roadway replaced by the realignment would be obliterated and revegetated.

Figure 3. Photograph of Site #2 View from east to west

Site #3, Milepost 13 (T32N, R11E, Section 9). Existing log jams on gravel bars direct the river flows toward the north side of the river channel where high flows actively eroded the terrace where the road was located. The proposed repair at Site #3 would reroute the road around the washout (Figure 4) using Forest Service Road 2670 and new alignment to reconnect to Road 26. The new alignment would leave Road 26 at Milepost 12.7, before the washout site and re-enter Road 26 on the east side of Site #4 at Milepost 13.8. The realignment would locate the road farther from the Suiattle River. The section of Road 26 with damage Site #3 and #4 would be abandoned and portions would be utilized as mitigation for impacts to associated wetlands. Culverts would be removed and wetland areas reconnected to the active Suiattle River floodplain.

Figure 4. Photograph of Site #3 View from east to west

Site #4, Milepost 13.4 (T32N, R11E, Section 10). The Suiattle River is actively eroding the terrace at MP13.4 where the road surface is approximately 5 feet above the river. During high flows, the river occupies portions of Road 26, eroding the bank and the road. The damaged portion of Road 26 that includes Site #4 (Figure 5) would be abandoned and revegetated; portions would be utilized as mitigation for impacts to associated wetlands. Culverts would be removed and wetland areas reconnected to the active Suiattle River floodplain. FR 26 would be rerouted upslope using Forest Service Road 2670 as described in the repair of Site #3 above.

Figure 5. Photograph of Site #4 View from east to west

Site #5 MP 14.4(T32N, R11E, Section 11). At MP 14.4, Road 26 crosses a debris fan of a small tributary perched high above the Suiattle River on an outside meander bend. The Suiattle River is eroding the toe of the fan and undermining the terrace that the road is located on. The proposed repair is to relocate the new road upslope, approximately 60 to 125 feet farther from the Suiattle River and outside of the banks of the Wild and Scenic River.

The relocation route would be approximately 900 feet long and would require the clearing of mature trees (24 inches in diameter to 73 inches) and other smaller trees and vegetation from approximately one to two acres. The existing Huckleberry Trailhead parking would be retained with access to the reconfigured Huckleberry Trail.

Figure 6. Photograph of Site #5 View west to east

Site #6, Milepost 20.8 (T32N, R12E, Section 14). High flows from the Suiattle River eroded the toe of the slope and approximate 300 feet of Road 26 at MP 20.8. The proposed repair would move the roadway an estimated 8 to 12 feet into the hill at the narrowest section of roadway, with a steep back slope. The cut height for the road repair would be part of the final design, with a bank taper from the highest point to about 100 feet before, and 150 feet after the peak of the cut for about 250 feet long repair section altogether. Work would be outside of the ordinary high water mark for the Suiattle River. Note: Several design details would be determined during the final design stage, including the final vertical alignment and specific road drainage details.

Figure 7. Photograph at Site #6 - View from east to west

Site #7 MP 20.9 Downey Creek Bridge (T32N, R12E, Section 14). The 2003 flood waters eroded the west-end approach to the Downey Creek Bridge. The proposed repair would utilize the existing 115 foot long cast-in-place box girder bridge to cross the main channel of Downey Creek with a 210 foot bridge extension at the west end. The bridge extension would be partially funded through a Salmon Recovery Fund Board grant developed in partnership with the Skagit River System Cooperative and the US Forest Service.

In order to extend the existing bridge to the west, three spans of approximately 70 feet each would be constructed, creating the 210 foot extension to completely cross the flood plain. As these spans are built, the existing embankment (approximately 3500 cubic yards) and the existing 48" culvert would be removed, and riprap (approximately 200 cubic yards) would be placed outside of the flood plain to armor the existing overflow channel and protect the new bridge pier. The area under the Downey Creek Bridge extension would be left with the native material on the surface.

Figure 8. Photograph of Site #7 View from west to east

Site #8 MP 22.9 Sulphur Creek Bridge (T32N, R12E, Section 24). The 2003 flood also eroded the road approach to the Sulphur Creek Bridge and damaged the guard rail. The proposed repair would build a concrete faced retaining wall at the edge of the Sulphur Creek Bridge deck, keyed to the bank. Existing on-site material would be used for the retaining wall backfill. All work would occur outside of the wetted channel. The damaged railing would be repaired or replaced.

Figure 9. Photograph of Site #8 View from west to east

1.5 Project Scope

The scope of the project includes analyzing all the damage and proposed repairs to eight sites on the Suiattle Road 26 at MP 6.0 (Site #1), MP 12.6 (Site #2), MP 13.0 (Site #3), MP 13.4 (Site #4), MP 14.4 (Site #5), MP 20.8 (Site #6), MP 20.9 (Site #7), and MP 22.9 (Site #8) in order to provide access for administrative and public use. Reanalyzing or changing recreation opportunities are outside the scope of this analysis; such as expanding campgrounds, providing wilderness buffers, or constructing accessible trails. The road repair at MP 14.4 would be configured to retain access to the existing parking area and Huckleberry trailhead.

The Forest Service and FHWA determined that the damaged sites on the Suiattle Road 26, while having differences in timing and some issues (example: road easement with the Department of Natural Resources at Milepost 6.0 is unique to that site only), have sufficient similarities to provide a basis for evaluating their environmental impacts together in one Environmental Assessment. The sites are all located on Road 26 and share the geographic location of the Suiattle River. (See the Council on Environmental Quality [CEQ] Regulations for implementing the National Environmental Policy Act [NEPA] (40 CFR 1508.25 (a)(3)). Therefore, for the purposes of a site-specific analysis required by NEPA, the proposed repairs of the eight damaged sites in the Suiattle River drainage on Road 26 are analyzed, and their effects are disclosed in this document.

1.6 Decision Framework

The Responsible Official for this proposal is Brent L. Coe, Acting Director of Project Delivery for Western Federal Lands Highway Division, Vancouver, Washington. Based on the analysis in this document, and considering the public comments received during scoping, the initial 30-day EA comment period and the comments received during the 30-day Amended EA comment period, the Responsible Official will decide whether further analysis is needed or whether a Finding of No Significant Impact is appropriate.

1.7 Project Record

This A-EA incorporates by reference the Project Record (40 CFR 1502.21) documenting this NEPA process. The Project Record contains Specialist Reports and other technical documentation used to support the analysis and conclusions in this EA. These Specialist Reports address soil and water, fish, wildlife, vegetation, fuels and fire, air quality, botany, heritage and cultural resources, visual quality, and recreation, documenting the detailed analytical framework, methods, and conclusions employed to assess impacts on these resources.

The reports also describe the affected environment, or baseline conditions, that provide background for the discussion of environmental consequences summarized in Chapter 3 of this A-EA. Relying on Specialist Reports and the Project Record helps implement the CEQ Regulations' provision that agencies should reduce NEPA paperwork (40 CFR 1500.4). The objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental impacts of the alternatives and how these impacts can be mitigated, without repeating detailed analysis and background information available elsewhere. The Project Record is available for review at the Western Federal Lands Highway Division office in Vancouver, Washington.

Figure 10. Suiattle Road 26 Repair Map

Figure 11. Merged Land Allocation Map

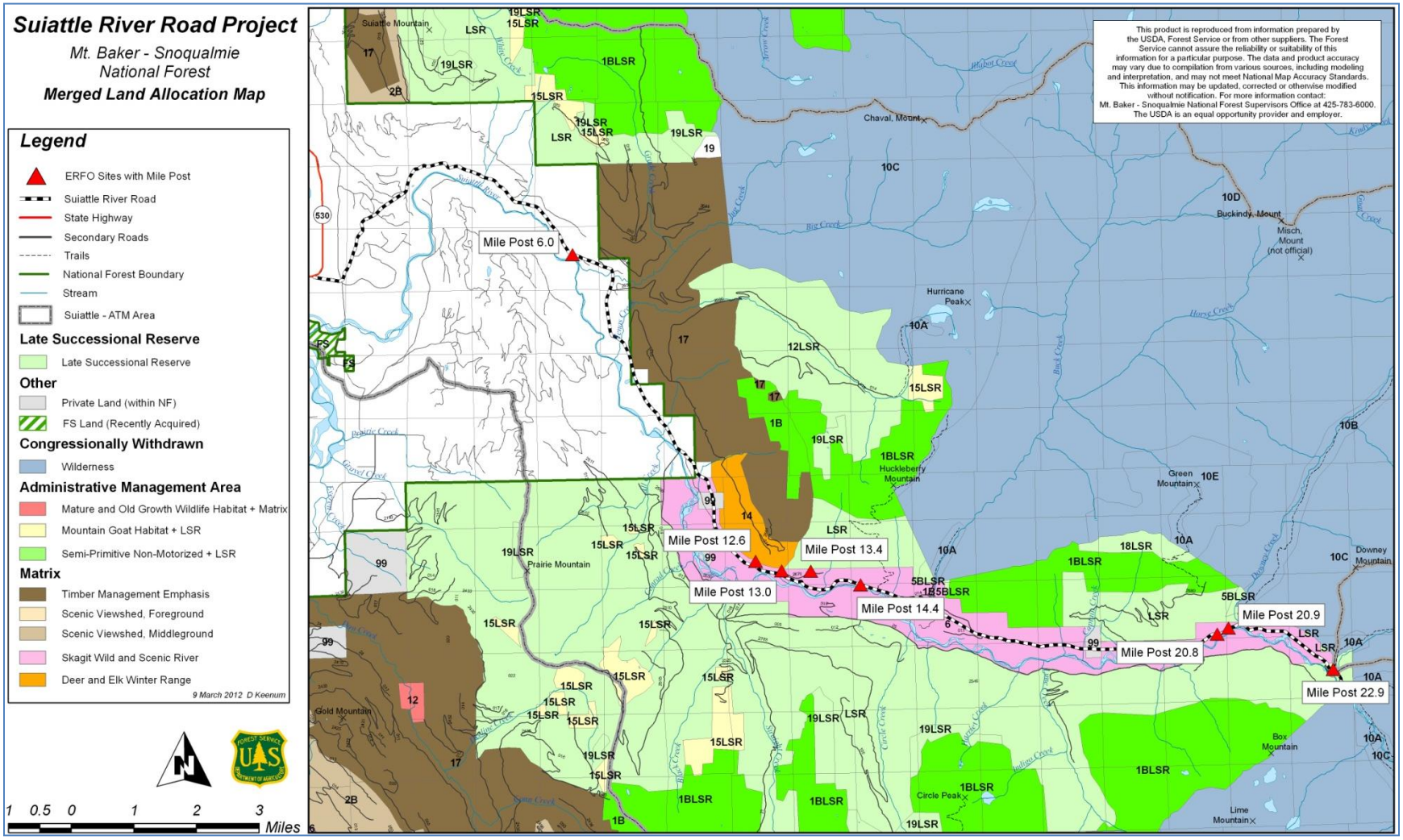


Table 1: Land Allocation Map Legend

Legend – Description	1994 Amendment Allocation	Notes
10A-E – Wilderness	Congressionally Withdrawn	
12 and LSR – overlap of Mature and Old-Growth Habitat and Late Successional Reserve	Administratively Withdrawn	These acres to remain as allocated in 1990 plan unless field work determines they are not needed for protection of the species (pine marten and pileated woodpecker).
15 and LSR – overlap of Mountain Goat Winter Range and Late Successional Reserve	Administratively Withdrawn	Part of the Late Successional Reserve but standards and guidelines for Mountain Goat more restrictive (no harvest or new roads).
17 – Timber Management Emphasis	Matrix	
18 and LSR – Research Natural Area [Green Mountain] and LSR	LSR	Part of the Late Successional Reserve but standards and guidelines for RNA are more restrictive.
19 and LSR – overlap of Mountain Hemlock Study Zone and Late Successional Reserve	LSR	No active mountain hemlock study underway or planned; see 1990 plan for standards.
1B – Semi-Primitive, Non-Motorized Dispersed Recreation	Administratively Withdrawn	No timber harvest or road construction.
1B and 5B and/or LSR – overlap with recommended Wild & Scenic River, Scenic River and Late Successional Reserve	Administratively Withdrawn	Part of Late Successional Reserve but most restrictive standards and guidelines in MA 1B.
1D – Roaded Natural Dispersed Recreation	Matrix	
5B and LSR - overlap of Recommended Wild & Scenic River, Scenic River and LSR	LSR	LSR Standards and Guidelines are more restrictive.
6 – Skagit Wild and Scenic River	Matrix	Part of the National Wild and Scenic River System; standards for management allow timber harvest (not Congressionally withdrawn).
99 – Private land		Not part of the National Forest system
LSR – Late Successional Reserve	LSR	

1.8 Public Involvement

2004 to 2006 scoping: In 2004, the Forest Service mailed a scoping letter describing initiation of the environmental analysis of repairs to roads across the MBS National Forest that were damaged in 2003. The Darrington Ranger District proposed to restore vehicular access to the Suiattle drainage by making repairs to three segments along Road 26 (MP 14.4, MP 20.9, and MP 22.9). During the years of 2004 to 2006, information was shared with the public through public meetings, the Forest webs site, and presentations by Forest staff. There were also numerous articles in major Puget Sound newspapers describing the projects and whom to contact to provide comments on issues related to the proposed actions.

2007 to 2011 scoping: In the spring 2007, Forest Service staff discovered damage in addition to the fall 2006 flood impacts to Road 26. The 2006/2007 damaged sites were located at MP 6.0, MP 12.6, MP 13.0, MP 13.4, and MP 20.8**.** Since that time, the Forest Service along with FHWA staff have inventoried the new damage and documented it in Damage Survey Reports, which identify what flood damage qualifies for ERFO funding.

In 2007 and 2008, the Darrington District held open houses in which the various projects on the District, including the Suiattle ERFO projects, were discussed with participants. The Forest Service and FHWA met numerous times from 2007 to 2009 with Tribal representatives, state, and federal agency staff persons, and other specialists in the development of repair options for Suiattle Road 26.

Western Federal Lands Highway Division decided in 2011 to analyze all 8 damage sites and proposed repairs in one environmental assessment. With the start of this EA, the FHWA sent a scoping pamphlet on the proposed repairs to a mailing list of over 300 interested parties, and posted the information and contacts on their website, http://www.wfl.fhwa.dot.gov/. The Forest Service also used their website (http://www.fs.usda.gov/mbs) to provide historic information on Suiattle Road 26 and flood damage, and posted a copy of the FHWA pamphlet on the proposed repair action with a link to the FHWA information site. Information on the proposed action was a focus area at the 2011 Darrington Ranger District Open House, held September 15, 2011. The Darrington Open House was attended by approximately 100 individuals. Written comments were received that evening, with additional comments received by email or postal service through 10/20/11.

2004 Scoping Comments: The Forest Service received scoping comments in 2004 from the Skagit River System Cooperative representing the Swinomish Tribe and the Sauk-Suiattle Indian Tribes, five organizations, and seven individuals (refer to the Scoping Report in Appendix D). Comments included the following recommendations:

- Road 26 be decommissioned beyond MP 20.9 to avoid future damage to water quality and fish habitat and to provide walk-in use of the Sulphur Creek campground;
- The Downey Creek Bridge be extended to enhance aquatic values;
- Access for river recreation be retained;
- Road 26 be repaired because it is important for recreation;
- Several comments that other roads in the Suiattle watershed be either repaired or decommissioned and various improvements made to the trail system; and
- Avoid cutting old growth trees.

2011 Scoping Comments: The FHWA received scoping comments from interested parties. Below is a summary of the most common comment themes: **(**See 2011 Comment Sheet in Appendix D**):**

- Numerous parties (90% of responders) requested that Road 26 be repaired as soon as possible due to its importance for access to recreation sites and the Pacific Crest Trail;
- Numerous individuals requested to restore the road with access available to all;
- Four recommendations that Road 26 be decommissioned beyond Road 2680 (MP 19) to avoid future damage to water quality and fish habitat and to provide walk-in use of the Sulphur Creek campground; and
- Recommendation that old trees not be cut.

2012 EA Comments: The FHWA received over 400 comments during the March 2012 30 day comment period (See 2012 Comment Sheet in Appendix E and F).

1.9 Tribal Consultation

As part of its government-to-government responsibility to consult with Native American Tribes, the Forest Service, in 2004 and FHWA in 2011, sent letters and pamphlets to representatives of the Lummi Nation, Samish Indian Nation, Sauk-Suiattle Indian Tribe, Stillaguamish Indian Tribe, Swinomish Indian Tribe, Tulalip Tribes, and Upper Skagit Tribe. The Forest Service and FHWA met several times with the Sauk-Suiattle Indian Tribe regarding the tribes' desire for access to gathering areas, and design of the proposed action to minimize impacts to fish and to culturally modified trees. The Forest Service met with the Upper Skagit Indian Tribe regarding developing a road repair design that would avoid impact to Chinook salmon rearing habitat at MP 20.8. The proposed repair at Downey Creek with bridge extensions was strongly supported by the Upper Skagit and the Sauk-Suiattle tribe to minimize impacts to fish and restore habitat in the vicinity of the Downey Creek. The result of tribal consultations was the development of a Salmon Recovery Board Fund (SRBF) proposal sponsored by the Skagit River System Cooperative (representing the Sauk-Suiattle and Swinomish Indian Tribes) for the extension of the Downey Creek Bridge and the removal of bridge approach fill and culvert in the floodplain. This SRBF grant was selected in 2011 for funding so there are resources available for the bridge extension and restoration of the riparian area at Downey Creek.

1.10 Issues

Identifying the key issues provides focus for the analysis. Key issues were used to develop alternatives to the proposed action, to meet prescribe management requirements and constraints, to develop mitigation measures, and to analyze environmental effects. Using the comments from the public, other government agencies, and tribes, a preliminary list of issues was developed. Issues were separated into two groups: key and non-key issues. The key issues are those directly influenced, indirectly influenced, or impacted by implementing the proposed action and are described below. Non-key issues are: 1) those outside the scope of the proposed actions; 2) already decided by law, regulation, Forest Plan, or other higher-level

decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence[2].

Scoping responses provide a variety of preferences for actions, as well as comments that are considered as substantive public comments in developing the issues. Scoping responses provided the following comments:

- Desire for access to be restored quickly to recreation sites (comment noted);
- Concern for impacts to fish habitat and failure to protect wetlands (key issue 1);
- Concern on risk and cost of current and future repairs (key issue 3);
- Concern for failure to protect Wild and Scenic River (key issue 1);
- Concern with the removal of old growth forest and failure to protect wildlife (key issue 2);
- Preference that the road be decommissioned or converted to a trail (key issue 4);
- Request from the Tribes and other interested parties that the Downey Bridge be extended. (key issue 1);
- Comment raised on need to evaluate all road repair projects in one EIS (to be determined in the Environmental Assessment); and
- Comment on local small contractors getting the repair contracts is outside the scope of this decision.

The then Responsible Official, Robert Lale, Director of Project Delivery for Western Federal Lands Highway Division in Vancouver, Washington, concurred with the following key issues identified for this proposed project and the measures developed:

Issues identified for this analysis

1.10.1 Issue 1: Aquatic Resources

Road 26 repairs may have adverse effects on the Suiattle River (Wild and Scenic River status) and floodplain processes, with further effects on aquatic integrity, Riparian Reserve conditions, wetlands, water quality, and fish habitat.

Measurement Criteria/Indicators:

- Sediment and erosion quantities recorded from similar activities;
- Effects of sedimentation and road construction materials on threatened fish;
- Connectivity of wetlands and floodplains – number and acreage enhanced, or connected; and
- Consistency with the Skagit Wild and Scenic River management Plan.

1.10.2 Issue 2: Old Growth Forest Resources

Road 26 repairs may have adverse effects on the old growth resources and wildlife species associated with older forests.

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2 The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…"

Measurement Criteria/Indicators:

- Amount of old forest impacted (acres of old forest removed and acres remaining); and
- Effects of old forest removal on federally listed wildlife species and other species of concern (Section 7 consultation).

1.10.3 Issue 3: Risk of Repairs and Cost-Effectiveness

Road 26 repairs may be subject to future flood impacts and therefore not cost effective.

Measurement Criteria/Indicators:

- Past damage and repair records; and
- Professional judgment on the likelihood of potential for future road failure.

1.10.4 Issue 4: Recreation

Upper Road 26 repair would diminish non-motorized opportunities for recreationist in the Suiattle River drainage.

Measurement Criteria/Indicators:

- Changes in access to trails and trailheads - # of trailheads and campgrounds accessible;
- Impacts to access for hikers, climbers, and stock users, daytrips and overnight trips;
- Impacts to outfitter/guide access and expected use, expected time for users;
- Impacts to wilderness access and use; and
- Impacts to dispersed recreation opportunities dependent upon motorized access.

2 Chapter 2 – Alternatives and Mitigations

Information on the repair sites in the 2012 Suiattle River Road Project EA span a time period of years 2003 to 2012, and over this time period, there have been changes in site conditions, the proposed repair designs and action alternatives.

2.1 Alternatives Considered but Eliminated from Detailed Study

In the project planning process for the repair of Road 26, options to the action alternatives were examined for lower cost or lower environmental risk while meeting the purpose and need to restore motorized vehicle access for recreation and administrative uses within the Suiattle River drainage (see Purpose and Need - page 3 of the EA). Options examined included various proposals for repair of the road in place, various repairs at MP 20.8 and proposals to close the last 2 to 4 miles of the Suiattle Road. Suggested actions that did not contribute toward meeting the purpose and need were eliminated from detailed study, except for the no action alternative. Analyzing and changing the recreation opportunities in the area are not part of this analysis as it does not meet the purpose and need for this proposed action and is outside the scope of the project. For example, actions outside of the scope of the project include expanding campgrounds, adding buffers to wilderness, and constructing more accessible trails. The following alternatives were considered, but were not studied in detail.

2.1.1 Alternative 1 Repair Forest Road 26 in Place

The alternative would rebuild the road in the same location as in the past. Road fill material would be placed into the newly eroded river channel within the ordinary high water mark (OHW) of the Suiattle River. Riprap would be placed along the road fill and within the riverbed at MP 6.0, MP 12.6, MP 13.0, MP 13.4, MP 14.4 and MP 20.8. Implementing this alternative would require maintaining a road in a location vulnerable to future flood events and therefore would not meet the need to provide safe, passenger car and stock trailer access to the public for recreational opportunities in the Suiattle River drainage. This alternative was considered but eliminated from detailed study because:

- Reconstruction at MP 6.0, MP 12.6, MP 13.0, MP 13.4, MP 14.4 and MP 20.8 would require material (riprap, soil etc.) encroachment into the river or adjacent floodplain. The road would remain in a location susceptible to another flood event and likely result in future failure of the road system.
- Placement of fill within the ordinary high water mark at MP 6.0, MP 12.6, MP 13.0, MP 13.4, MP 14.4 and MP 20.8 would have adverse effects on the free-flowing characteristics of the Wild and Scenic River. This alternative would not support the Skagit Wild and Scenic River standards and guidelines.
- Placement of fill within the ordinary high water mark at MP 6.0, MP 12.6, MP 13.0, MP 13.4, MP 14.4 and MP 20.8 would not promote the Aquatic Conservation Strategy objectives of the Forest Plan.
- Placement of fill within the ordinary high water mark at MP 20.8 would fill in active Chinook spawning habitat in the vicinity of Downey Creek, and would be an adverse effect for a federally listed species.

- Reconstruction of road at MP 6.0 in the previous location would be within the State defined channel migration zone of the Suiattle River and would not meet State regulations for road reconstruction involving a road easement across State lands.
- Repair in place of the road approach to the Downey Creek Bridge would not remove fill from the current road that exists in the overflow channel of Downey Creek. The road fill would continue to restrict d channel processes in the floodplain.

2.1.2 Alternative 2
Repair Forest Road 26 with reroutes and repairs in place. Repair MP 20.8 with riprap into the river. Repair MP 20.9 and MP22.9 in place, with repairs to the both bridge approaches.

This alternative would repair Road 26 with reroutes at MP 6.0, MP 12.6, MP13.0, MP 13.4, MP 14.4, and in place at MP 20.8 with riprap into the river. Repairs at MP 20.9 and MP 22.9 would be in place repairs to two bridge approaches. This alternative would move the road to a location farther from the river, which would remove much of the road from locations vulnerable to future flooding. This alternative would build the road in the same location at MP 20.8 with riprap into the river to armor the toeslope from eroding. Road fill material would be placed into the newly eroded river channel, within the ordinary high water mark of the Suiattle River. Implementing this alternative would move much of the road from locations vulnerable to future flood and would meet the need to provide safe, passenger car and stock trailer access to the public for recreational opportunities in the Suiattle River drainage. This alternative was considered but eliminated from detailed study because:

- Placement of fill and riprap within the ordinary high water mark at MP 20.8 would have adverse effects on the free-flowing characteristics of the Wild and Scenic River. This alternative would not support the Skagit Wild and Scenic River standards and guidelines.
- Placement of fill within the ordinary high water mark at MP 20.8 would not promote the Aquatic Conservation Strategy objectives of the Forest Plan.
- Placement of fill within the ordinary high water mark at MP 20.8 would fill in active Chinook spawning habitat in the vicinity of Downey Creek, and would be an adverse effect for a federally listed species.
- Repair in place of the road approach to the Downey Creek Bridge would not remove fill from the current road that exists in the overflow channel of Downey Creek. The road fill would continue to restrict channel processes in the floodplain.

2.1.3 Alternative 3
Repair Road 26 with reroutes and repairs in place. Repair Road 26 at MP 20.8 with a shift into the hillslope and supporting revetment wall. Repair MP 20.9 in place with bridge extensions to Downey Creek Bridge, and repair MP22.9 in place with bridge approach repair.

This alternative would repair Road 26 with reroutes at MP 6.0, MP 12.6, MP13.0, MP 13.4, and MP 14.4. It would repair flood damage at MP 20.8 moving the road into the hillslope and construction of a revetment wall for support. The MP 20.9 repair would be in place with bridge extensions to Downey Creek Bridge. The in-place MP 22.9 repairs would include repairs to the bridge approaches. This

alternative would reroute much of the road at locations vulnerable to future flooding to sites farther from the river.

This alternative would build the road in the same location at MP 20.8 with the proposed repair supported by a steel pile reinforced log and root-wad revetment, with the road constructed above and behind the structure. The road would be supported by a retaining wall (a mechanically stabilized earth wall (MSEW)) through the narrowest section. The repair would armor the site, so that the road constructed above and behind the structure would not be as susceptible to future shifts in the river. Placement of the road outside the ordinary high water mark at MP 20.8 would support the Skagit Wild and Scenic River standards and guidelines.

This alternative would repair the bridge approach to Downey Creek with an extension of bridges which allows for the removal of fill and a culvert in the Downey Creek floodplain. Implementing this alternative would move much of the road from locations vulnerable to future flood events and would meet the need to provide safe, passenger car and stock trailer access to the public for recreational opportunities in the Suiattle River drainage. This alternative was considered but eliminated from detailed study because:

- Construction activities would temporarily encroach into the active channel even though the reconstructed road at MP 20.8 would be outside of the ordinary high water mark....
- The construction of the revetment would encroach into an active Chinook spawning habitat in the vicinity of Downey Creek, and would have an adverse effect on a federally listed species.
- Placement of the revetment within the Riparian Reserve at MP 20.8 would not promote the Aquatic Conservation Strategy objectives in the Forest Plan as well as other repair options.
- The revetment wall would limit the slope and bank material eroding to the river channelfish spawning habitat.

2.1.4 Alternative 4 Decommission Road 26 beyond Road 2680

This alternative would Repair Road 26 as in the proposed Alternative B at sites MP 6.0 to MP 14.4, close Road 26 at the junction with Road 2680 and decommission Road 26 beyond that point to the terminus (approximately 4 miles). This alternative is similar to Alternative C which would close the road, but not decommission the road. This alternative was proposed from scoping comments to reduce risk of sediment delivery from Road 26 to Chinook salmon use areas along the upper Suiattle River. This alternative was not studied in detail because a decision on how to manage the remaining 4 miles of Road 26 would be deferred to the USFS who has the authority to determine such access and travel management changes on their road system. An alternative to decommission the road would not provide public access by vehicle, foot or stock to the Upper Suiattle River drainage.

Concerns with this alternative included the following:

- The decommissioning of the road would not be consistent with the Forest Plan direction for Suiattle Road 26 (USDA Forest Service 1994 Page 4-75 and see Roads and Access on page 50), which is to maintain the road as a major arterial road for mixed vehicles.
- The decommissioning of Road 26 would not be consistent with the 2012 Suiattle Road Access Travel Management Decision Notice (DN) and Finding of No Significant Impacts (FONSI) for the desired road system in the Suiattle River drainage. All of the action alternatives and the No

action alternative retained Road 26 for passenger vehicles from Mile Post 0.0 to the terminus at Milepost 23.2.

- The decommissioning of Road 26 was considered and not pursued in previous road repair environmental assessments for the Suiattle River drainage as documented in the 2006 DN and FONSI for the Suiattle Road 26 Repair and the 1992 DN and FONSI for the Suiattle Road Repairs. After the 1990 floods, public meetings were held and analysis (as well as public comments) supported the motorized access to trailheads, raft and kayak launch sites, and access to the second of only two campgrounds in the drainage. Again in 2006, the Suiattle Road 26 Repair Environmental Assessment considered road to trail conversion, but found this alternative to not meet the purpose and need of providing a full spectrum of recreation opportunities in the drainage as per Forest Plan direction (USDA Forest Service, 2006 DN and FONSI for Suiattle Road 26 Repair).
- The decommissioning of Road 26 would eliminate vehicle access to the second of only 2 developed campgrounds in the Suiattle River drainage. This would negatively impact the USFS ability to provide a full spectrum of recreation opportunities in the drainage as per Forest Plan direction.
- The decommissioning of Road 26 at Road 2680 would not provide for foot or stock access to the Upper Suiattle drainage or to the Sulphur Creek campground, or 4 trailheads. The decommissioning of Road 26 at the Downey Creek Bridge would remove the culvert, and fill in the bridge approach, resulting in the loss of the current foot bridge that provides foot and stock access unto the Downey Creek Bridge. Users would have to ford Downey Creek or side channels of the Suiattle River to regain access to Road 26 from Downey Creek to the features beyond that bridge.
- The decommissioning of Road 26 at Road 2680 would result in the need for a new parking lot for multiple trailheads beyond the road closure, and the future conversion of the road to trail to access the multiple trailheads and features in the upper Suiattle River drainage.

2.1.5 Alternative 5 Decommission Road 26 and Convert to Trail from before Downey Creek (MP 20.5)

This alternative is similar to Alternative C, but would close and convert to a trail the last three miles of Road 26. This option was also considered, but was not studied in detail because a decision to convert a road to trail is a decision for the USFS who has the authority to determine such access and travel management changes on their road system. This Alternative was not further analyzed due to the following:

- The decommissioned or converted road to trail would not be consistent with the Forest Plan direction for Suiattle Road 26 (USDA Forest Service 1994 Page 4-75 and see Roads and Access on page 51), which is to maintain the road as a major arterial road for mixed vehicles.
- The decommissioning of Road 26 would not be consistent with the 2012 DN and FONSI for the open road system in the Suiattle River drainage in which all of the action alternatives and the No action alternative retained Road 26 for passenger vehicles from Mile Post 0.0 to the terminus at Milepost 23.2.
- The decommissioning of Road 26 was considered and not pursued in previously road repair environmental assessments for the Suiattle River drainage as documented in the 2006 DN and FONSI for the Suiattle Road 26 Repair and the 1992 DN and FONSI for the Suiattle Road

Repairs. After the 1990 floods, public meetings were held and analysis (as well as public comments) supported the motorized access to trailheads, raft and kayak launch sites, and access to both campgrounds in the drainage. Again in 2006, the Suiattle Road 26 Repair Environmental Assessment considered road to trail conversion, but found this alternative to not meet the purpose and need of providing a full spectrum of recreation opportunities in the drainage as per Forest Plan direction (USDA Forest Service, 2006 DN and FONSI for Suiattle Road 26 Repair).

- The decommissioning of Road 26 would eliminate vehicle access to the second of only two developed campgrounds in the Suiattle River drainage. This would not allow the USFS to provide a full spectrum of recreation opportunities in the drainage as per Forest Plan direction.The decommissioning of Road 26 at the Downey Creek Bridge would require the removal of the culvert and fill in the bridge approach, resulting in the loss of the current foot bridge that provides user access unto the Downey Creek Bridge. An alternative trail route to ford Downey Creek or side channels of the Suiattle River to regain access to Road 26 from Downey Creek to the features beyond that bridge has not been identified. Access to four trailheads and Sulphur Creek campground would be lost.
- The decommissioning of Road 26 at MP 20.5 and conversion to trail would result in the need for a new parking lot for multiple trailheads beyond the road closure. The conversion of road to trail would need to identify how to manage facilities beyond the road closure without road access: i.e., pumping toilets, garbage removal, bridge maintenance, etc.

2.2 Alternatives Considered in Detail

The No Action Alternative and two action alternatives were studied in detail.

2.2.1 Alternative A - No Action

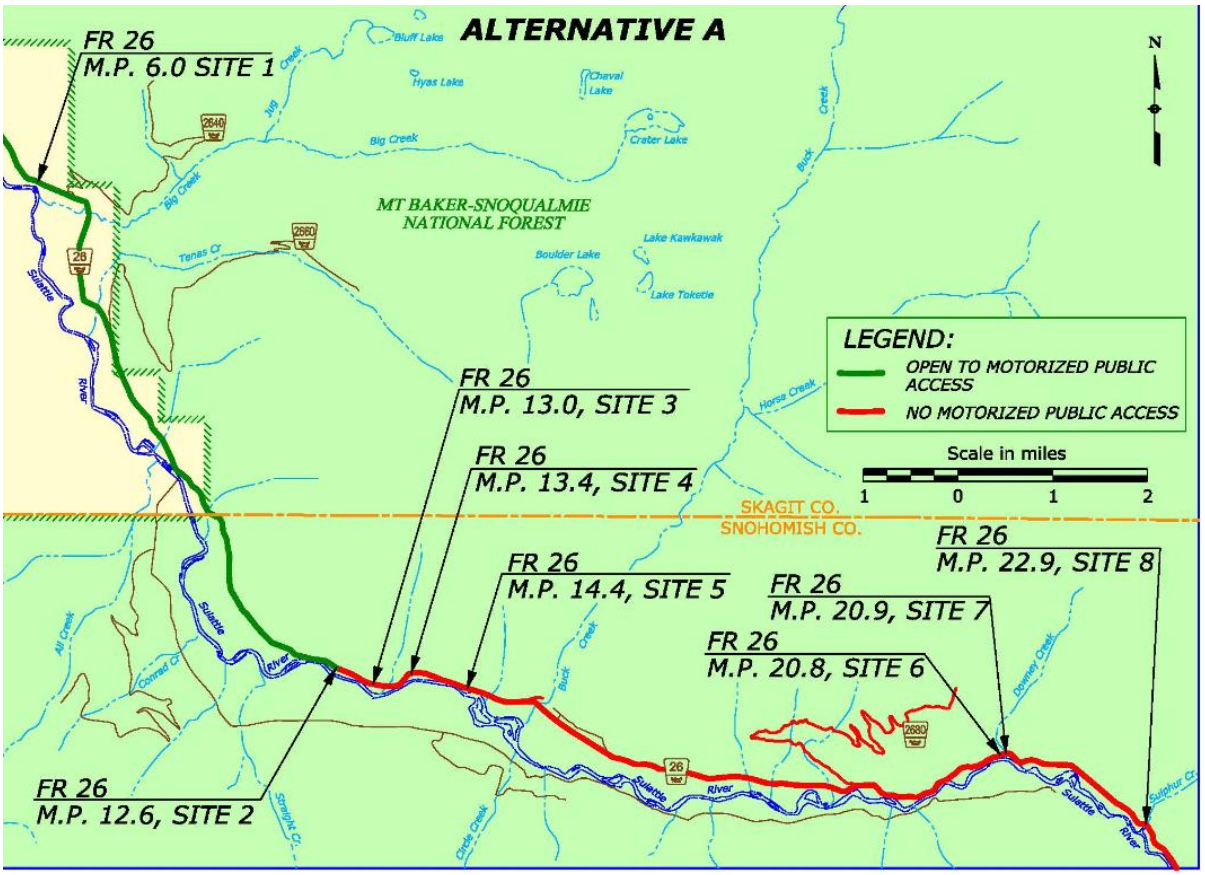
The No Action Alternative would result in no repairs to any of the eight flood-damaged sites at this time. Road 26 would remain a road maintenance objective 3and 4 road on the USFS road system to be maintained for passenger car as per the 2012 Suiattle ATM DN and FONSI.

Site #1 MP 6.0: The current detour at Site #1 (constructed in 2007) is under a permit extension from the Department of Natural Resources for use through the end of 2012. With the No Action Alternative, the permit would expire with no new solution for vehicle access at this location. The current temporary route is within the channel migration zone as defined by Washington Code (WAC-222-030), and another extension of the permit is not guaranteed.

Site #2 MP 12.6: The gate at Site #2 would be retained with any vehicle access beyond the gate being limited to administrative access only. There would be no public motorized use of Road 26 for the remaining 10.5 miles beyond MP 12.6. ***Site #3 MP 13.0:*** The temporary route at Site #3 would remain as a temporary detour for motorized administrative traffic only (one lane, high clearance vehicles). ***Site #4 MP 13.4:*** The temporary road at Site #4 would remain as a temporary administrative access only (one lane, high clearance vehicles) road. ***Site #5 MP 14.4:*** The temporary road at Site #5 would remain at current standards for administrative use (one lane, high clearance vehicles) only. ***Site #6 MP 20.8:*** No repair would occur at MP 20.8 at this time. The No-Action Alternative would leave the two plus miles of road beyond Downey Creek closed to vehicles (ML 1). ***Site #7 MP 20.9:*** There would be no repair at this time of the road approach to the Downey Creek Bridge. The current trail access onto the Downey Creek Bridge would remain, providing foot, bicycle and stock access to the trailheads of Downey Creek, Sulphur Mountain, and the Suiattle drainage. ***Site #8 MP 22.9:*** There would not be any repair of the road approach to Sulphur Creek Bridge. The bridge would continue to be inaccessible to

vehicles (ML 1). A temporary support was added to the Sulphur Creek approach after the 2003 floods so foot and stock access can cross the Sulphur Creek Bridge.

Figure 12A: Alternative A



2.2.2 Alternative B - Repair Road 26 at all eight sites, with relocations away from the river, and rehabilitation of abandoned sections of Road 26

This alternative proposes to restore vehicle access with repairs of the flood-damaged sites, and to rehabilitate abandoned sections of Road 26. The repaired road would include reroutes at MP 6.0, repair at MP 12.6 and reroutes around MP 13.0 and 13.4. The reroutes would be located farther away from the river and streams than before the flood, and outside of the Suiattle River floodplain. There would be approximately 1.6 mile of Road 26 that would be abandoned. Wetland restoration and rehabilitation would occur in the area where the road is removed.

This alternative also includes repairing Road 26 at MP 20.8, MP 20.9 (Downey Creek Bridge), and MP 22.9 (Sulphur Creek Bridge). At MP 20.9, there would also be the removal of fill and a culvert in the Downey Creek floodplain with the bridge extensions over Downey Creek allowing the creek flows to more fully occupy historic channels.

Site #1, Milepost 6.0 (T33N, R10E, Section 18). The proposed action would repair the Suiattle Road 26 at Site #1 (Figure 2) by rerouting the road approximately 400 feet to the north of the eroded river bank of the Suiattle River, which would be outside of the channel migration zone. The total length of the realigned road would be approximately 2150 feet through previously harvested State lands, managed by the Department of Natural Resources. The roadway would be double-lane, paved with asphalt to the

width of adjoining segments of Road 26. The existing and temporary road replaced by the realignment (approximately 1850 feet) would be obliterated and revegetated. This would include asphalt removed, road bed scarified, portions of the roadbed replanted, large woody debris placed at entry points to discourage motorized use of the abandoned road. Additionally wetland restoration would reconnect existing wetlands and maintain existing flow patterns.

Site #2, Milepost 12.6 (T32N, R11E, Section 9). The Suiattle River moved into the hillside at Site #2 and washed out about 800 feet of roadway (Figure 3). The proposed action would reconstruct the road for approximately 950 feet above the washout, with an offset of approximately 50 to 70 feet from the existing road. This realignment would remove approximately 1.2 acres of mature forest. Blasting would be required to excavate rock at the MP 12.6 site; gneiss bedrock is anticipated to be present in cut slopes from approximately MP 12.6 to MP 12.8. The proposed roadway width is 14 feet plus curve widening and turnouts. The existing roadway replaced by the realignment would be obliterated. Conserved topsoil, seed and mulch would be stockpiled to be used in the rehabilitation of the obliterated section of road.

Site #3, Milepost 13 (T32N, R11E, Section 9) and Site #4, Milepost 13.4 (T32N, R11E, Section 10). A reroute of Road 26 would bypass both damaged sites #3 (Figure 4) and #4 (Figure 5). The approximate 1.1 mile reroute would use Forest Service Road 2670 for the first 0.5 mile and then new road construction through second growth and mature forest to reconnect to Road 26. The new road alignment would leave Road 26 at MP 12.7, before washout Site #3 and re-enters Road 26 at MP 13.8, on the east side of damaged Site #4 The realignment would locate the road farther from the Suiattle River and outside of wetlands, crossing a forested terrace. The reroute would result in ground disturbance on approximately 6 acres which would include approximately 2.0 to 3.0 acres of mature, older forests. The 6 acres disturbance is an estimate based on tightening design elements in response to comments of reducing road template impacts.The 2010 design for this segment of road has been narrowed in some locations, and the amount of timber clearing required has been reduced, by eliminating proposed roadside ditches in some locations, and by steepening the cut slope on some of the shorter cut banks. Felled trees would be decked and used for administrative projects such as improved fish habitat, repairs, or to sell. The proposed roadway width is approximately 14 feet plus curve widening and turnouts. The roadway would be crushed aggregate surfacing.

The section of Road 26 with damage Site #3 and #4 would be abandoned and rehabilitated. This would include removal of culverts, revegetation of portions of the route, placement of large woody debris at entry points to discourage motorized use of the abandoned road, and reconnection of wetlands to the Suiattle River floodplain. Additional details on the wetland restoration can be found in the hydrology section of Chapter 3.

Site #5 MP 14.4 (T32N, R11E, Section 11). The new road would be located in a reroute section upslope, approximately 60 to 125 feet farther from the Suiattle River and outside of the banks of the Wild and Scenic River. The 400 foot temporary road along the river would be removed. The road repair at MP 14.4 would be configured to retain access to the existing parking area and the existing Huckleberry trailhead. A reconfiguration of the Huckleberry trail was completed in fall of 2011 to repair the trail where it was impacted by flood and temporary road repair.

The removal of the temporary bypass would require excavation with hauling and disposal of an estimated 1,500 cubic yards of material and replacement of the existing 24-inch diameter culvert with a larger culvert (100-year flood capacity) in the non fish-bearing stream. Excess excavated materials would be hauled off site. Work would occur outside of the banks of the Suiattle Wild and Scenic River.

The relocation route would be about 600 to 900 feet long and would require excavation and fill to grade level with approximately 3,000 cubic yards of unclassified borrow and material taken from the cut sections and former bypass. This relocation route would follow the location previously cleared of timber in 2006 and 2010. Approximately 1.5 acres of timber clearing was performed in 2010, which included some previously cut timber lying on the ground from the terminated 2006 road project. Most of the timber felled in 2006 and 2010 that is remaining on-site would be removed during the road construction. Three of the largest Douglas-fir trees would be left outside the clearing limits to meet down wood guidelines of the MBS Forest-wide Programmatic Wildlife Biological Assessment and Biological Opinion. Excess trees would be decked and used for administrative projects such as improved fish habitat, repairs, or to sell. The abandoned portion of the road bed replaced by the realignment would be obliterated and revegetated.

Site #6, Milepost 20.8 (T32N, R12E, Section 14). The road would be reconstructed to 16 feet by widening the roadway slightly into the hillside. For the proposed repair, the additional cut would be an estimated 8 feet into the hill through the narrowest section of roadway, with a 1h:1v backslope. The expected cut height would be part of the final design, with a current estimate of a cut of 40 feet at the highest section. The cut height would taper up to this point for about 100 feet before, and 150 feet after the peak, so it would be about 250 feet long altogether. Note there are several design details that would be determined with the final design stage. This would include the final vertical alignment and specific road drainage details.

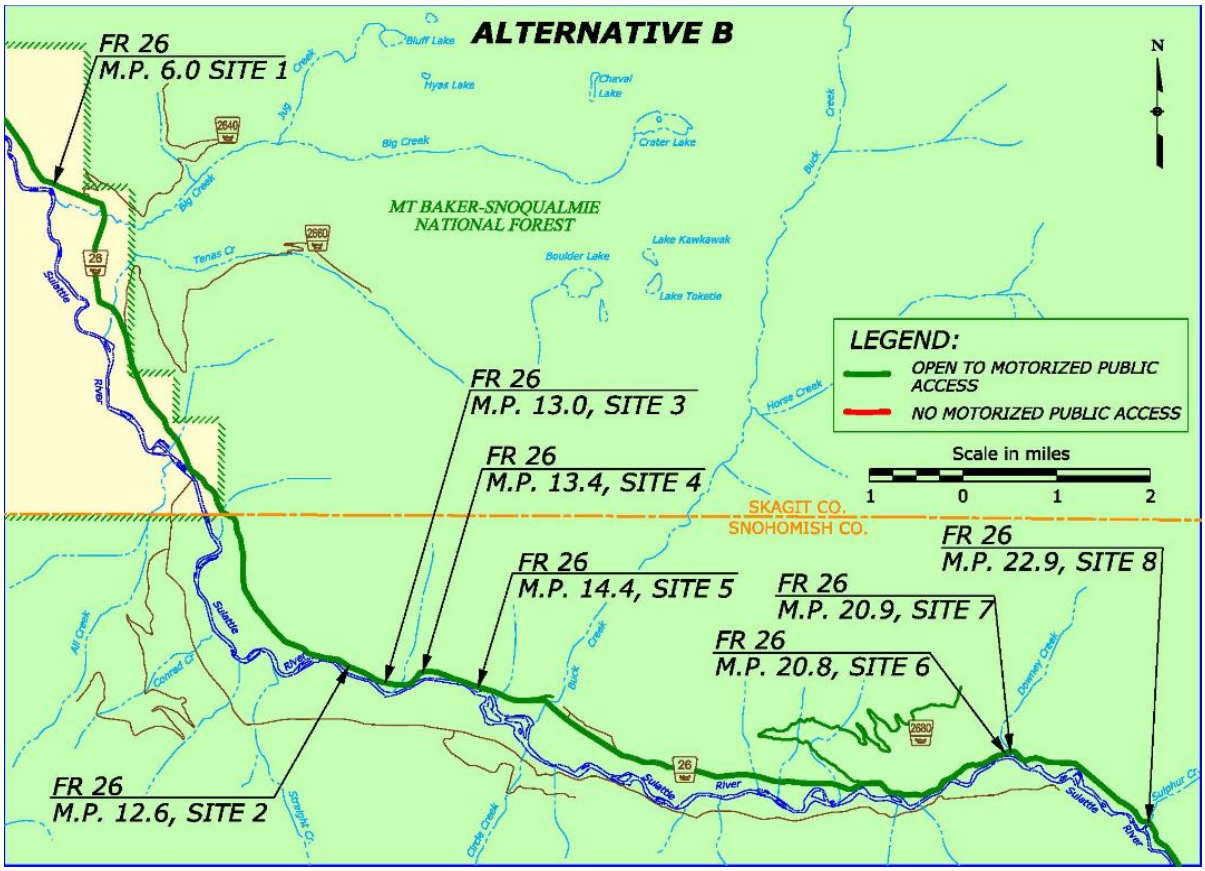
Site #7 MP 20.9 Downey Creek Bridge (T32N, R12E, Section 14). The proposed Downey Creek Bridge repair would utilize the existing 115 foot long cast-in-place box girder bridge to cross the main channel of Downey Creek, but would add a 210-foot bridge extension at the west end. This new design would reduce the channel constriction presented by the existing bridge by removing the west approach embankment that is on the flood plain. The new design was developed with input from the Sauk-Suiattle and Upper Skagit Indian Tribes, Washington Department of Fish and Wildlife biologists, National Marine Fisheries Service and Fish and Wildlife Service Biologists, and the public. The bridge extension would be partially funded through a Salmon Recovery Board grant developed in partnership with the Skagit River System Cooperative and the US Forest Service.

In order to extend the existing bridge to the west, three spans of approximately 70 feet each would be constructed, creating a 210 foot bridge extension to completely cross the flood plain. As these spans are built, the existing embankment (approximately 3500 cubic yards) and the existing 48" culvert would be removed, and riprap (approximately 200 cubic yards) would be placed outside of the flood plain to armor the existing overflow channel and protect the new bridge pier. All the new spans would be supported by piers founded on piles or spread footings that are deep enough to resist scour. The bridge extension would be single lane, matching the existing bridge. The additional 210 feet of bridge length would provide for additional stream channel width to better accommodate flood flows and allow for natural channel processes to occur across the width of the flood plain. The area under the Downey Creek Bridge extension would be left with the native material on the surface.

Site #8 MP 22.9 Sulphur Creek Bridge (T32N, R12E, Section 24): A concrete faced retaining wall would be built at the edge of the Sulphur Creek Bridge deck and keyed to the bank. Existing on-site material would be used for the retaining wall backfill. This would include excavating existing material, placing a portion of it as backfill. Up to 100 cubic yards of riprap would be installed to protect the concrete wing walls. This design would enlarge the area for the channel under the bridge by another 15

feet for a total width of about 65 feet (estimated bankfull channel width is 64 feet). All fill removal would occur outside of the current wetted channel. The damaged railing would be repaired or replaced.

Figure 12B: Alternative B



2.2.3 Alternative C - Repair Road 26 at MP 6.0 to 14.4 and close Road 26 at the junction with Road 2680.

This alternative proposes to restore vehicle access with repairs to flood-damaged sites as far as the junction of Road 26 with Road 2680, where the road would be blocked to vehicle access (the gate from MP 12.6 would be moved to the road junction with 2680). Alternative C would be the same as Alternative B for the repairs from MP 6.0 to MP 14.4. The repaired road would include reroutes at damaged site Milepost 6.0, around Milepost 12.6, 13.0, 13.4 sites and Milepost 14.4. The reroutes would be located farther away from the river and streams than before the flood, and be outside of the Suiattle River floodplain. There would be approximately 1.6 mile of Road 26 that would be abandoned and rehabilitated in the Lower Suiattle River drainage as a result of the proposed reroutes. The road rehabilitation would reconnect several wetlands to the Suiattle River floodplain.

Road 26 beyond the junction with Road 2680 would be retained in the current condition, with no repairs at MP 20.8, or to the approaches to Downey Creek Bridge (MP 20.9) or the Sulphur Creek Bridge (MP 22.9). Alternative C would be similar to the No Action Alternative A for sites as MP 20.8 to MP 22.9. The Downey Creek floodplain fill and culvert would not be removed. The trail approach to the Downey Creek Bridge would remain along with the temporary repair for foot access at the approach to the Sulphur Creek Bridge. A decision on how to manage the remaining four miles of Road 26, with potential for conversion from road to trail, would be deferred to the USFS who has the authority to determine such

access and travel management changes on their road system. The 2012 Suiattle ATM DN and FONSI documents the current USFS decision to retain Road 26 for passenger vehicles to the terminus. Any new information in this document would be available to the USFS for future land management decisions.

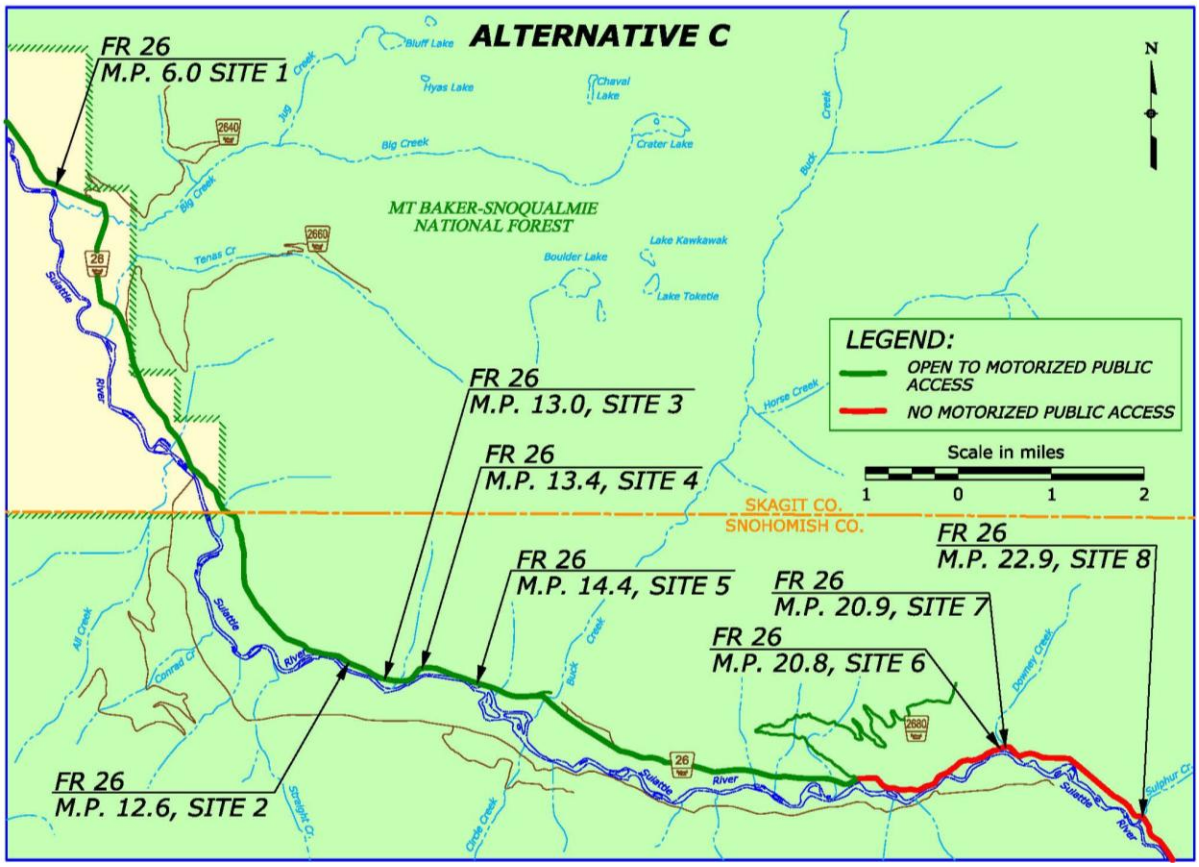


Figure 12C: Alternative C

2.3 Standard Management Practices and Mitigation Measures

Mitigation measures include actions taken to avoid, minimize, reduce, eliminate, rectify, or compensate for adverse impacts of management activities proposed under Alternatives B and C. The following is a summary of standard management practices and general mitigation measures that would apply to this proposed project. Detailed description of methods, monitoring, and contractor responsibility would be implemented through Forest Service requirements, the Clean Water Act CWA), and other regulatory directives.

In response to public comments and issues identified during Interdisciplinary (ID) Team meetings, standard management practices were identified and mitigation measures were developed to reduce or eliminate potential resource impacts. Table 2 lists these standard management practices and mitigation measures.

The following mitigation measures and standard management practices and requirements for the protection of the resources are an integral part of Alternatives B and C, and are incorporated in the effects analysis in Chapter 3. NEPA regulations (40 CFR 1508.20 Mitigation) state the following:

Mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action,
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation,
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment,
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and
- Compensating for impact by replacing or providing substitute resources or environments.

Mitigation effectiveness is rated as follows for this project:

High. The mitigation is highly effective (estimated at greater than 90 percent) at meeting the objective, and one or more of the following types of documentation is available:

- Research or literature,
- Administrative studies,
- Experience: professional judgment of an expert, or
- Fact: evident by logic or reason.

Moderate. The mitigation is moderately effective (estimated at 60 to 90 percent), and its effectiveness is supported either by evidence or logic. Implementation of this mitigation needs to be monitored, and the mitigation may be modified if needed to achieve its objective.

Low. The mitigation is somewhat effective (estimated at less than 60 percent), but its effectiveness is not supported by substantial evidence; or, professional judgment indicates limited success in implementation or meeting objectives. Implementation of this mitigation needs to be monitored, and the mitigation may be modified if necessary to achieve its objective. Table 2 below lists the standard management requirements (from the Forest Plan, as amended) and the mitigation measures (developed by the ID Team for this project). They apply to each action alternative (Alternatives B and C).

Table 2. Management Requirements and Mitigation Measures

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
A Stormwater Pollution Prevention Plan and an erosion control plan would be developed and implemented to minimize erosion and sedimentation; the plans would be in place and all components activated prior to ground disturbing activities.	Reduce erosion and prevent silt-laden water from entering streams or other waterbodies. Prevent and minimize effects to water quality.	MODERATE (Implementation of Stormwater Pollution Prevent Plans are an industry standard)	Forest Plan S&Gs Soil Resource #2; Water Resources and Riparian Areas #2 and 5	Contract Administrator
Reduce risk of erosion and sediment transport using methods that may include, but are not limited to: straw bales, silt fencing, sand bags, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas. Sediment traps should be incorporated into ditches.	Prevent silt-laden water from entering the streams or other waterbodies.	MODERATE (Brown 2002)	ROD S&G RF-5	Contract Administrator
Detailed inspections shall be made with the onset of the rainy season and immediately after the first heavy rain following construction. During construction, all erosion controls should be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately. If inspection shows that any of the erosion controls are ineffective, work crews should be mobilized immediately to make repairs, install replacements, or install additional controls as necessary. Sediment should be removed from erosion controls once it has reached 1/3 of the exposed height of control. Any necessary corrective measures would be immediately taken to ensure all erosion control devices are properly functioning.	Minimize sedimentation to fish-bearing waters.	MODERATE (Logic)	Forest Plan S&Gs Soil Resource #2 Memorandum of Understanding (MOU) between FS and WDFW for hydraulic projects (2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
If wet weather conditions during project operations result in transporting sediment to flowing waters, stream channels, or other water bodies, especially those having high potential to deliver to salmonid habitats, and the erosion control methods are not preventing the sediment transport, cease operations until the weather conditions improve, unless delaying operations would increase the risk of storm or high flow erosion. Coordination with Forest Service aquatic specialists should be part of this decision process.	Minimize sedimentation to fish-bearing waters and protect aquatic resources. Avoid rutting and compaction to susceptible wet soils.	MODERATE (Avoids activity when impact would occur)	Forest Plan S&Gs Soil Resources #1, #2, and #3; Fish Habitat Management #1	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
A Spill Prevention, Control, and Countermeasures Plan or a Hazardous Spill Plan would be implemented during construction activities to reduce the potential for chemical spills and transport to nearby stream. Have hazardous spill cleanup materials and trained operators on site. Fuel trucks must also carry spill cleanup materials. Prior to starting work each day, check all machinery for leaks (fuel, oil, hydraulic fluid, etc); make all necessary repairs before leaving the vehicle staging area and entering a Riparian Reserve.	Prevent and minimize effects to water quality.	MODERATE (Implementation of spill plans are an industry standard)	Forest Plan S&Gs Soil Resource #2; Water Resources and Riparian Area #2	Contract Administrator
All machinery maintenance involving potential contaminants (fuel, oil, hydraulic fluid, etc.) shall occur at a site greater than 150 feet from stream channels, water bodies, or wetlands, or at a prior approved site. Equipment operated instream should be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud. Stationary power equipment (e.g., generators, cranes) operated within 150 feet of any stream, water body, or wetland should be diapered to prevent leaks.	Prevent and minimize effects to water quality and aquatic resources.	MODERATE (Implementation of spill machinery maintenance and operation are an industry standard)	Forest Plan S&Gs Soil Resource #2; Water Resources and Riparian Area #2	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
Excess material (spoils) shall be disposed of and stabilized so it does not enter flowing waters, stream channels, or other water bodies.	Prevent and minimize effects to water quality.	MODERATE (Logic)	Forest Plan S&Gs Soil Resource #2; Water Resources and Riparian Area #2; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator
Wastewater from project activities and water removed from within the work area shall be routed to an area landward of the 100-year floodplain to allow removal of fine sediment and other contaminants prior to being discharged to the stream.	Minimize sedimentation to fish-bearing waters and protect aquatic resources.	MODERATE (Logic)	USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005); Forest Plan S&Gs Fish Habitat Management #; ROD S&G RF-51	Contract Administrator
Stabilize all work areas within 3 days following the construction period.	Minimize sedimentation to fish-bearing waters. Protect stream bank integrity and aquatic resources.	MODERATE (Burroughs 1989)	Forest Plan S&Gs Soil Resources #5; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
Site restoration and cleanup includes protection of bare earth by seeding, planting, mulching, and fertilizing. All damage areas at the project site are to be restored to pre-work conditions including restoration of the pre-flood conditions, including channel bank slope and contours, to the extent practicable. Minimize channel bank grading to revegetate and restore bank conditions.	Minimize sedimentation to fish-bearing waters. Protect stream bank integrity and aquatic resources.	MODERATE (Burroughs 1989; Switalski et al. 2004)	Forest Plan S&Gs Soil Resource #4; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator
All disturbed ground shall be reclaimed using appropriate best management practices. Retain measures to prevent sediment from reaching streams until the soil is secure. If appropriate, native species should be used in revegetation. Disturbed ground where runoff has the potential to drain into stream channels shall be revegetated or protected from surface erosion by seeding, mulching, or other methods prior to the fall rainy season. Within 1 year after project completion, disturbed stream banks would be revegetated with woody vegetation to maintain soil stability and provide shade and future sources of instream large woody debris (LWD).	Prevent silt-laden water from entering streams. Prevent and minimize effects to water quality. Protect stream bank integrity and aquatic resources.	MODERATE (Burroughs 1989; Madej 2001; Switalski et al. 2004)	Forest Plan S&Gs Soil Resource #5; ROD for preventing and managing invasive plants in the Pacific NW S&G #13 (Forest Service 2005); BMPs R-12; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
Segments of the road decommissioned, placed in storage, or disturbed by construction activities would be revegetated	Prevent silt-laden water from entering the streams or other waterbodies. Reduce the effects of lost soil productivity.	MODERATE (Luce 1997; Burroughs 1989; Switalski et al. 2004)	ROD S&G RF-2, RF-3, RF-4, RF-5	Contract Administrator
When constructing or decommissioning roads: • Outslope the roadway surface unless outsloping would increase sediment delivery to streams or where outsloping is infeasible. • Route road drainage away from channels and potentially unstable hill slopes. • Where necessary, install water bars to route water away from streams to allow removal of fine sediment and other contaminants before discharge to the stream.	Limit water accumulation and/or concentration, erosion, and sediment delivery to streams to protect water quality.	MODERATE (Years of use by agency) HIGH (Water bars are an industry standard and have been shown to be effective on closed roads)	ROD S&G RF-5; BMPs R-1, R-3, R-4, R-5, R-7, R-8, R-9, R-11, R-12, R-14	Contract Administrator
All non-treated wood present in the river/stream shall be left in place (a measure designed to protect existing LWD in the stream channel).	Protect stream bank integrity and aquatic resources.	HIGH (Avoids damage that would occur if trees were removed)	ROD S&G FA-2; Forest Plan S & G's Water Resources and Riparian Reserves #2, #7, and #8; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
Any trees greater than 12 inches diameter at breast height to be felled within reach of the stream shall be considered for felling toward the stream and left in place or utilized to armor disturbed stream banks, if feasible. The disposition of down wood, such as blowdown or felled hazard trees would be determined based on the Forest woody debris policy with priority given to retaining onsite or stockpiled for use in restoration projects. Move LWD at all streamside construction sites, and place along the riprap where feasible, if this would protect structures and improve stream habitat. A Forest Service aquatic specialist would coordinate with FHWA prior to construction to obtain the limits of clearing and perform a field review of the trees that should be felled and those that should remain.	Protect stream bank integrity and aquatic resources. Maintain routing of large wood in channel network.	HIGH (Avoidance) LOW (Experience shows wood is often broken during removal and placement is often difficult)	Forest Plan S&Gs Water Resources and Riparian Reserves #2, #5, #8; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005) ACS Obj. 6	Contract Administrator
Stream banks shall be properly sloped to an angle of stability (natural repose) when removing culverts.	Protect stream bank integrity and aquatic resources.	MODERATE (MBS Forest roads experience)	ROD S&G RF-4	Contract Administrator
Boundaries of the clearing limits associated with site access and construction shall be flagged to prevent ground disturbance of critical riparian vegetation, wetlands, and other sensitive sites beyond the flagged boundaries.	Protect riparian and other sensitive habitats; protect aquatic resources.	HIGH (Avoidance)	USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Soil, Water Resources, and Fisheries				
When breaking up natural (boulder/bedrock) or man-made (bridge decking, piers, abutments) materials using hydraulic breaker, or test drilling, the following measures shall be done (when appropriate): • Prevent spoils from operations from entering the active channel • Monitor the underwater sound/vibration effects of hydraulic breaker operations at the various horizontal distances from the site using underwater sound-detection equipment	Protect aquatic resources.	MODERATE (Logic)	USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator
Minimize roads in Riparian Reserves. The location, design, and reconstruction of necessary crossings should minimize disruption to natural hydrologic paths and adverse effects to aquatic resources. Avoid sidecasting of loose material. Accommodate at least the 100-year flood, and associated bedload and debris.	Maintain surface hydrology and Riparian Reserve function and integrity.	HIGH (Avoidance)	ROD S&G RF-2, RF-4; BMPs T-8, T-10, T-11, R-1, R-6, R-11, R-12, R-14; Forest Plan S&Gs Water Resources and Riparian Reserves #6	Contract Administrator
Post-construction measures requiring ground disturbing work likely to cause erosion shall be implemented during the dry season of the year but still must fall within the designated in-water work windows.	Minimize sedimentation to fish-bearing waters.	HIGH (Logic)	MOU between FS and WDFW for hydraulic projects (2005)	Contract Administrator
A qualified Forest Service biologist would perform periodic site inspections during construction to ensure that the project is progressing as planned and that there are no unintended consequences to fish, wildlife, plants, and their habitats.	Protect aquatic resources and fish, wildlife, plants, and their habitats.	MODERATE (Logic)	Forest Plan S&Gs Fish Habitat Management #1; USFWS Biological Opinion and Conference Report (August 16, 2005) and USDC (NOAA/NMFS) Biological and Conference Opinion (October 28, 2005)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Wildlife				
To minimize the likelihood of adverse effects to nesting marbled murrelet, all project activities would occur between 2 hours after sunrise and 2 hours before sunset, from May 1 to September 15 each year. Timing restrictions are considered successful by eliminating sources of disturbance during the critical breeding period. The timing restrictions that would be implemented reduce potential adverse effects to post-incubating murrelets, but would not mitigate possible effects on incubating birds.	Eliminate sources of disturbance during the critical breeding period.	HIGH [MBS Forest experience, Biological Opinion (USFWS 2005) In the post-incubation stage, 90 percent of feedings by adults occur within two hours of sunrise and sunset; therefore, mitigation measure would dramatically reduce the potential disruption of feeding. During the incubating season, adults would be at the nest site continuously, so the mitigation measure would be ineffective.	Biological Opinion of the Effects of the Mount Baker-Snoqualmie National Forest Program of Activities for 2003-2007 on Marbled Murrelets and Northern Spotted Owls (USFWS 2002a)	Contract Administrator

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Botany				
If any previously undiscovered Threatened, Endangered, and Sensitive (or other rare or uncommon) vascular plants, bryophytes, lichens, or fungi are discovered, before or during project implementation, halt work until a Forest Service botanist is consulted and necessary mitigation measures are enacted.	Prevent impact to TES or S&M plants.	HIGH (logic)	Forest Plan S&G Threatened, Endangered, and Sensitive Species #1	Contract Administrator
Equipment brought on to the National Forest must be free of weeds and weed seeds. If weeds are present in the project area, all equipment and gear should be cleaned before leaving the area to avoid spreading the infestation further.	Prevent introduction of weeds. Prevent weed spread.	MODERATE (Forest Service 2005) HIGH (Logic)	Forest Plan S&G Wilderness – (Vegetation) #1; Forest Plan S&Gs Vegetation Management #2; ROD for preventing and managing invasive plants in the Pacific NW S&G #2 (Forest Service 2005)	Contract Administrator; District Botanist
All gravel, fill, and borrow material sources must be weed free.	Prevent introduction of weeds.	MODERATE (Forest Service 2005)	ROD for preventing and managing invasive plants in the Pacific NW S&G #7 (Forest Service 2005)	Contract Administrator; District Botanist
Use weed free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System lands.	Prevent introduction of weeds.	HIGH (Forest Service 2005)	ROD for preventing and managing invasive plants in the Pacific NW S&G #3 (Forest Service 2005)	Contract Administrator; District Botanist
For known infestations of noxious weeds, schedule appropriate weed treatments including R6-approved herbicides.	Eradicate known infestations.	HIGH (Forest Service 2005)	ROD for preventing and managing invasive plants in the Pacific NW S&G #16 (Forest Service 2005)	Contract Administrator; District Botanist

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Botany				
Any seed used for revegetation shall be tested using standards of the Association of Official Seed Analysis (WSCIA 2003) and pass State standards for noxious weeds prior to use (WAC 16-302-100).	Prevent introduction and spread of weeds.	HIGH (Forest Service 2005)	ROD for preventing and managing invasive plants in the Pacific NW (Forest Service 2005)	Contract Administrator; District Botanist
Abandoned roads and new cut and fill slopes would be seeded and mulched to deter the establishment of noxious weeds. Fertilizer is not recommended. Seed and straw mulch must be free of weeds and weed seeds. One to two inches of weed free straw should be placed over the seed. The seed mix to use consists of the following: • Tufted hairgrass (*Deschampsia caespitosa*) @ 4 lbs/acre • Annual ryegrass (*Lolium multiflorum*) @ 10 lbs/acre • Winter triticale (*Triticum aestivum* x *Secale cereale*) @ 60 lbs/acre • Alsike clover (*Trifolium hybridum*) @ 2 lbs/acre	Prevent introduction and spread of weeds.	HIGH (Forest Service 2005)	Forest Plan Best Management Practices; ROD for preventing and managing invasive plants in the Pacific NW S&G #3 (Forest Service 2005)	Contract Administrator; District Botanist
The location of any soil material moved off-site must be made known to the Botanist for monitoring purposes.	Prevent introduction and spread of weeds and treat new infestations quickly.	HIGH (Logic)	ROD for preventing and managing invasive plants in the Pacific NW S&G #8 (Forest Service 2005)	Contract Administrator; District Botanist

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Heritage Resources				
If a previously unidentified heritage resource were discovered during project implementation, or if an identified resource were affected in an unanticipated way, the Forest Heritage Specialist would be notified and the Forest would fulfill its responsibilities in accordance with the Programmatic Agreement between the Forest Service and the State Historic Preservation Office regarding cultural resource management on National Forests in the State of Washington.	Protect cultural resources.	MODERATE (Experience)	Forest Plan, Archaeology Protection, p. 4-99 36 CFR 800 regulations of the National Historic Preservation Act.	Contract Administrator; Forest Heritage Specialist

Table 2. Management Requirements and Mitigation Measures (continued)

Mitigation Measure or Project Design Feature	Objective	Effectiveness and Basis	Forest Plan Standard & Guideline	Enforcement
Recreation				
Alternatives B & C Road 26 would be kept open to all vehicles to MP 12.5, where the existing temporary gate will remain, and a suitable turnaround and parking area for 10 vehicles will be created, utilizing the already wide section of road through this area. Beyond MP12.5 the road is to be kept open to foot traffic, stock use, bicycle use and administrative traffic (as practicable) except when there are hazardous conditions. • The closure for hazardous conditions at any work site would occur between the hours of 0700 to 1200 and from 1300 to 1700 during weekdays, as needed. • Signage would be installed, stating the hours and times of closed/open access at MP 12.5 and at MP 15.0 or 23.0 (as appropriate) • A travel plan that would use the existing road and designated signed detour routes around the project area(s) shall be approved by the Forest Service prior to starting construction activities. • Construction fencing and other appropriate hardware would be used to designate the passage around the project area(s). • If longer delays or closures are necessary for specific construction activities, advance public notice (a minimum of 2 weeks) is required before those delays or closures. This includes notice to local radio stations and newspapers within a 75 mile radius of the project area, and notification to the District Ranger and Forest Service liaison for this project. Alternative B The detour routes around Downey Creek and Sulphur Creek Bridge project areas could include horse fords, foot logs, and/or ladders to access the bridge decks.	Minimize effects on recreationist and other forest users	High (experience)	1990 Forest Plan p. 4-84, 4-140	Contracting Officer Representative (COR) for road projects Forest Service Liaison

3 Chapter 3 – Environmental Consequences

This section summarizes the physical, biological, social, and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2.

3.1 Roads and Access Affected Environment

Prior to the flood damage in 2003, 2006 and 2007, the Suiattle Road 26 was a high use, multi-seasonal administrative and recreational route on the Darrington Ranger District. Forest Service facilities in the area accessed by Road 26 and 2680 include Buck Creek and Sulphur Creek Campgrounds, Suiattle Guard Station cabin rental, Green Mountain Horse Pasture, seven trailheads, and two lookouts. Road 26 is also a major portal to the Glacier Peak Wilderness and the Pacific Crest National Scenic Trail (PCT) and for commercial guiding and river rafting. The roads are also used for other dispersed recreation including scenic driving, gathering mushrooms, berries, and other forest products, hunting, fishing, and snow play. Forest Service staff use Road 26 for access to recreation sites and facilities, law enforcement, fire patrols, and resource management and monitoring. The road is used by tribal members to access tribal cemeteries, an existing tribal allotment, and the exercise of treaty rights and practices of ceremonial and religious significance.

3.1.1 Roads Analysis Findings, Maintenance Levels

Forest-wide road analysis, a process used to inform decisions related to road management, has been completed for the Mt. Baker-Snoqualmie (MBS) National Forest. This analysis (The MBS Roads Analysis, July 2003) identified transportation management opportunities and priorities. It assessed Forest transportation management needs, long-term funding, and expected ecosystem, social, and economic effects, including effects on the values of roadless and unroaded areas. It also incorporated Forest transportation management objectives and priorities. Road analysis provided the USFS with critical information needed to identify and manage a minimum road system that is safe and responsive to public needs and desires.

Suiattle Road 26 is a major arterial road. From MP 0.0 to 9.8, it is Traffic Service Level (TSL) G and Operational Maintenance Level (ML) 5(see definitions below). From MP 9.8 to 23.2, Road 26 is TSL H and ML 4. This means that the Suiattle Road 26, MP 0.0 to its end, has heavy traffic of mixed vehicle types, a high priority for safety, and a road surface that is stable for predominant traffic (Forest Plan, p. 4-75, complete definitions, p. 4-71). The Suiattle Watershed Analysis states that there is a high need for recreation access via Road 26 (USDA Forest Service, 2004 -Suiattle WA p. 11 Chapter 3).

Maintenance Level 1: Intermittent service roads managed as closed to vehicular traffic. They are kept in storage until the next project access need; the closure period must exceed one year.

Maintenance Level 2: Roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.

Maintenance Level 3: Roads open and maintained for travel by a prudent driver in a standard passenger car. Roads are typically low speed, single lane with turnouts and spot surfacing.

Maintenance Level 4: Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced; however, some may be single lane. Paved surfaces or dust abatement may be used.

Maintenance Level 5: Roads that provide a high degree of user comfort and convenience. These roads are normally double lane and paved, although some may be aggregate surfaced and dust abated.

3.1.2 Past Flood Damage

The Suiattle River Road 26 has been damaged in past floods, and there is a risk of future damage for portions of the road that are located immediately adjacent to the river. (Ramsden, K, D Smith. 2010. Suiattle River channel mapping and Forest Road 26 erosion risk analysis). A listing of the history of the Suiattle Road and past flood damage and repairs on the Suiattle Road 26 are in Appendix A.

Road 26 intersects numerous perennial channels (crossings of the river channel or Suiattle River tributary crossings) and five of the road channel crossings are bridges. Because of the history of high-flows and flood damage, the Forest has spent time and resources on storm-proofing and upgrading the roads. Small culverts have been replaced with larger culverts and the road has been realigned or re-routed in places.

3.1.3 Private Property Access

ANILCA (Alaska National Interest Lands Conservation Act) requires that access to non-federal owned land within the boundaries of the National Forest System be adequate to secure the owner reasonable use and enjoyment of their land. State, private and tribal lands accessed by the Suiattle Road beyond the first damaged site at MP 6.0 include:

- State and private lands between MP 6.0 and MP 10.0 at the Boundary Bridge
- Private lands with homes between at MP 10.0 to MP11.0
- Two Sauk-Suiattle Tribal cemeteries, located at approximately MP 8.0 and MP 11.4
- Tribal and private in holdings both on the north and south side of the Suiattle River. There is an 80-acre parcel tribal allotment adjacent to the Suiattle Road 26 at about milepost 19.3, next to the Green Mountain Horse Pasture. It is located in the SE ¼ of the SE ¼ of Section 17 and the NE ¼ of the NE ¼ of Section 20, T32N, R12E. In the 1920s, allotments were made to members of the Sauk-Suiattle Tribe. This 80-acre parcel was allocated to Jimmy Price, once chief of the Tribe. The heirs of Jimmy Price number over 100 and all have part ownership.

Administrative Sites

The Green Mountain Horse Pasture (about MP 19.5) is located along Road 26 just before the Green Mountain Road 2680 (about MP 20). It has a fenced pasture of approximately ten acres and a barn and shed that may be eligible for the National Register of Historic Places. This pasture is used for administrative purposes as a helicopter landing for fires, search and rescues, projects and as a group camp.

The Captain Moses Seed Orchard is on the south side of the Suiattle River, accessed by Road 26 to the Boundary Bridge at MP 10 and then via Road 25.

3.2 Roads and Access Environmental Consequences

3.2.1 Alternative A (No Action)

Under the no action alternative, no repairs to the eight damaged sites would be made at this time.

Site #1 MP 6.0: The current detour at Site #1 (constructed in 2007) is under a permit extension from the Department of Natural Resources for use through the end of 2012. With no action the permit will expire with no new solution for vehicle access at this location. The current temporary route is within the channel migration zone as defined by Washington Code (WAC-222-030), and another extension of the permit is not guaranteed. The Forest Service is the responsible road manager for Road 26 but without a legal permit the Forest Service has no rights to operate, maintain or use the temporary road detour.

There is also a risk of slumping of the current detour that would result in loss of the temporary road and drivable access on Road 26 beyond MP 6.0. In either case, access to the upper Suiattle drainage would then be seasonal, dependent on travelling 19 miles on Road 23, Road 27 over Rat Trap Pass, a gravel road with narrow and steep grades that includes a 3000' elevation gain, and Road 25.

No Action would elevate the risk of the loss of Road 26 and loss of access to federal, state, and private lands, Tribal cemeteries and lands for much of the year. The Suiattle Road at Site #1 would no longer meet its designated service level (TSL-G) and maintenance level (ML 4-5) standards or serve to provide vehicular access to private inholdings, for the public to reach trailheads, campgrounds, or forest recreational areas higher in the Suiattle River drainage, or provide access for Tribal members to cultural sites and traditional subsistence activities.

Site #2 MP 12.6: The gate at Site #2 would remain in place and motorized access beyond the gate would be administrative access only. This would restrict tribal, private, and public motorized use of Road 26 for 10.6 miles. Access to the Downey Creek Trailhead would be an additional 8.3 miles by bicycle, foot or stock on a closed road, while the Suiattle Trailhead would be an additional 10.6 miles by bicycle, foot or stock. The Suiattle Road at Site #2 and beyond would no longer meet Forest Plan designated service and maintenance level standards.

Site #2 is adjacent to the Suiattle River where current river flows are directed against the bank. The river is eroding the toe slope with the potential to further undermine this section of the road and without repair it would be likely to fail. This may restrict the type of administrative use of the road beyond MP 12.6 and the ability to access and provide future road maintenance, tribal access, private access, and public access to areas and sites farther up the Suiattle River drainage. Bicycle traffic is currently facilitated by limited maintenance to remove down trees and keep drainage culverts cleared. Access for maintenance of roads such as Road 2680 to Green Mountain would eventually be lost, and roads would deteriorate and fail which could lead to the erosion of soils.

Site #3 MP 13.0 and Site #4 MP 13.4: The temporary routes at Site #3 and Site #4 would remain as a temporary detour for motorized administrative traffic (one lane, high clearance vehicles). This would restrict the type of vehicle and potential use of the road beyond this point. The Suiattle Road at Site #3 and #4 would no longer meet its designated service and ML 4 standard and thus limit tribal, private, and public access to areas and sites farther up the Suiattle River drainage.

Without any repairs at Site #3 and #4, there would be a high risk that the Suiattle River would continue to erode the terrace where the temporary road is located. Access for maintenance of roads such as Road 2680 to Green Mountain, for tribal use, for access to private lands, and for public use would eventually be lost, and roads would deteriorate and fail.

Site #5 MP 14.4: The temporary road at Site #5 would remain at current standards for administrative use (narrow, one lane, high clearance vehicles). This may restrict the type of vehicle and potential use of the road beyond MP 14.4 to vehicles that can navigate the temporary road fix. The Suiattle Road at Site #5 would no longer meet its designated service and ML 4 standard and thus limit tribal, private, and public access to areas and sites farther up the Suiattle River drainage.

The temporary road is in a high-risk location as it is adjacent to the Suiattle River where current river flows are directed against the bank. The river is eroding the toe slope of the bank with the potential to undermine the section of the terrace where the road is located. Without repairs at Site #5, there would be a high risk that the Suiattle River would washout and close Road 26 at this point based on the frequency of historic flows in the last 50 years. There would be no improvements made to the Huckleberry parking area which connects to the reconfigured Huckleberry Mountain Trail.

Site #6 MP 20.8: There would be no repairs of the road at MP 20.8. The river flows at the toe slope of MP 20.8 have the potential to further erode this section of the road. In addition, the steep temporary cut slope would likely continue to slough/ravel onto the road. Therefore, without the planned repairs to shift and widen the roadway, there would likely be further loss of road width, restricting vehicle access past this point.

Site #7 MP 20.9: There would be no repair of the road approach to the Downey Creek Bridge. This would continue to leave the two plus miles of road beyond Downey Creek closed to vehicles. Sulphur Creek Campground, Suiattle Trailhead, and Downey Creek Trailheads would remain inaccessible to vehicles. The current trail bridge access on to Downey Creek Bridge would remain, providing foot, bicycle and stock access to the trailheads of Downey Creek, Sulphur Mountain, and the Suiattle drainage. There would be no vehicle access to the Sulphur Creek campground. There would be no removal of the fill or culvert in the Downey Creek floodplain in the road approach to the Downey Creek Bridge.

Site #8 MP 22.9: There would no repair of the road approach to Sulphur Creek Bridge. The bridge would continue to be inaccessible to vehicles (ML 1). Access across the Sulphur Creek Bridge would continue to be with the temporary board support, in need of maintenance so as to not lose foot and stock access to the trailheads in the upper Suiattle River drainage.

Risk of Future Washouts

There is high probability that future flood events would continue to erode the road where the damaged sites are located. With no action, the temporary road which provides administrative access beyond MP 6.0 would be at risk where the road is adjacent to the active channel (MP 12.6, MP 13.0, MP 13.4, MP 14.4, and MP 20.8). Without repair, shifting, or rerouting, these sections of road would be likely to fail, and there would be no vehicle access on the 17.8 miles of road beyond that MP 12.6 (5.6 miles on Road 2680, 1.6 miles on Road 2600014 and 10.6 miles of Road 26).

Cost of Repair and Future Maintenance and Repairs

With no repairs at any of the sites, there would be no repair costs. A piece of forest road infrastructure, from MP 12.6 to MP 20.9, would be accessible for administrative traffic and road maintenance activities until temporary access is lost, but would not be open for motorized public access. Limited road maintenance would continue on portions of Road 26 open to administrative traffic. Of the 24.4 miles of forest roads past Site #1 (Road 26 – 17.2 miles, Road 2680 – 5.6 miles, and Road 2600014 – 1.6 miles), only 6.6 miles are currently open and being maintained. The segment of Road 26 from MP 12.6 to MP 20.9 (Downey Creek) is open only for administrative and emergency vehicle access at this time. The

approximate cost to minimally maintain the 8.3 miles of road in this segment has ranged between $5000 and $10000 per year since 2006 depending on the year and amount of work performed. The last 2.3 miles of road past Downey Creek have received only hand maintenance since 2003. There is a high-risk that Road 26 will wash out at Site #2. Once equipment access is lost there would be no road maintenance on the 17.8 miles of road beyond Site #2. Over time, the lack of access for road maintenance activities would contribute to other failure types all along this segment of road, such as ditch and culvert failures, downed trees, and slides.

Summary

Alternative A would not make any repairs at MP 6.0 and from MP 12.6 through the end of the Road system which would limit vehicle access in the Upper Suiattle River drainage. Access would be seasonal for much of Road 26 (MP 6.0 to MP 12.6), via Roads 23, 27, and 25 over Rat Trap Pass. Law enforcement, fire patrols and fire fighters, search and rescue and administrative staff would not be able to respond to incidents in the same timeframe as prior to the flood. Response to emergencies would take longer. Routine work, such as trail maintenance, would be more expensive due to the added time to gain access.

This alternative would limit tribal, private, and public access to individuals able to traverse the Suiattle River drainage by foot, bicycle or stock. There would be a high potential for a total loss of access to certain areas for individuals with mobility challenges. This alternative would not be consistent with the Forest Plan, the Forest Roads Analysis, and the Access and Travel Management Plan.

3.2.2 Alternative B

If implemented, this Alternative would include repairing all eight damage sites and restoring vehicle access to the terminus of the Suiattle Road. By completing the work at all eight sites, full access would be reestablished, thus allowing for full Tribal, private, and public access to the sites and areas previously served by the road as envisioned by the planned and intended use of the Suiattle Roads (Roads 26, 2680 and 2600014) according to the Forest Plan. After the repairs, Road 26 would be returned to its full and intended operating service level (TSL G/H) and maintenance level (ML 5/4) standards.

Site #1 MP 6.0: Acquisition of a new easement with the Department of Natural Resources would provide for the proposed Road 26 reroute outside of the designated channel migration zone of the Suiattle River. The reroute would provide access to federal state, private and tribal lands in a more secure location.

Site #2 MP 12.6: Road 26 at Site #2 would be moved to a more secure location upslope and farther away from the Suiattle River. This would restore tribal, private, and public motorized use of Road 26 in the Suiattle River drainage, and enhance administrative access for maintenance of trails and roads, such as, Road 2680 to Green Mountain and Road 2600014 Buck Creek Campground.

Site #3 MP 13.0 and Site #4 MP 13.4: The reroute at Site #3 and #4 would shift Road 26 to a more secure location out of the Suiattle floodplain, reducing the risk of future flood damage. The repairs would enhance access for tribal, private, and public use and maintenance of trails and roads, such as Road 2680 to Green Mountain, Road 2600014 Buck Creek Campground and other recreational sites in the upper Suiattle River drainage. This work would include the removal and rehabilitation of approximately 1 mile of existing Road 26 that currently is adjacent to the river.

Site #5 MP 14.4: The reroute at Site #5 would shift Road 26 upslope to a more secure location on the terrace above and farther away from the Suiattle River, reducing the risk of future flood damage. The

repairs would enhance access for tribal, private, and public use and maintenance of trails and roads, such as, Road 2680 to Green Mountain, Road 2600014 Buck Creek Campground and other recreational sites in the upper Suiattle River drainage.

Site #6 MP 20.8: The repair of Road 26 at MP 20.8 would shift into the slope to gain additional road width. The cut slope above MP 20.8 is likely to create higher short-term road maintenance costs, due to loose unconsolidated material on the cutslope that may slide onto the road and need to be removed. This repair would provide access to the Downey Creek Bridge Site, which is immediately beyond MP 20.8.

Site #7 MP 20.9: The repair at MP 20.9 would provide motorized access across Downey Creek with an extension to the west end of the Downey Creek Bridge. This would allow motorized access to the trailheads of Downey Creek, Sulphur Mountain, and the Suiattle River drainage and the recently repaired Pacific Crest Trail. There would also be motorized vehicle access to the Sulphur Creek campground.

Site #8 MP 22.9: The repair of the road approach to Sulphur Creek Bridge would provide the final repair to access the Sulphur Mountain and Suiattle River trailheads. Restored access across the Sulphur Creek Bridge would provide stock vehicle access to the Suiattle trailhead parking lot where stock vehicle parking and turnaround is available.

Risk of Future Washouts

There is low probability that future flood events would impact the repairs sites at MP 6.0 since the reroute would locate the road outside of the designated channel migration zone. There would be a low probability of future washouts at MP 12.6 with the road relocation upslope and farther away from the river. The realignment of Road 26 on to Road 2670 and other new road location at higher elevation would bypass the damaged sites of MP 13.0 and MP 13.4, and locate the road outside of the Suiattle floodplain. The reroute at MP 14.4 would shift the road upslope and farther away from the river, and also lessen the risk of future washouts. The repair at MP 20.8 would have a moderate risk of future failure due to the lack of riprap at the toe of the slope. However, by widening the road and shifting it into the hill, the risk of future washouts would be decreased from the No Action alternative. The culvert removal and Downey Creek Bridge extension at MP 20.9 would better accommodate flood flows and lessen risk of washouts. The Sulphur Creek Bridge approach at MP 22.9 would be repaired with a retaining wall moved back from the stream channel, so the hardening and added opening space would reduce the risk of future approach washouts.

Cost of Repair and Future Maintenance and Repairs

Cost to repair the eight damaged sites is approximately $ 5.0 million. Future maintenance costs would be similar to pre-flood conditions. Future repair costs would be lower than the past or present costs, with the expectation that the proposed repairs will greatly reduce the risk of future flood damage.

Summary

Alternative B would restore vehicle access for tribal, private, and public use and for administrative use of all of Roads 26, 2680, and 2600014. The repairs would contribute toward the management of the National Forest System roads, and be consistent with the Forest Plan, the Forest Roads Analysis, and the Access and Travel Management Plan.

3.2.3 Alternative C

If implemented, Alternative C would repair the first five damaged sites at MP 6.0 to MP14.4 as described in Alternative B and close Road 26 at the junction of Roads 26 and 2680. This would provide vehicle

access on approximately 19 miles of Road 26 and access on Road 2680 to the Green Mountain Trailhead, Road 2600014 (Buck Creek Campground). After the repairs, Road 26 would be returned to its full and intended designated TSL G/H and ML 5/4 standards up to the junction with Road 2680.

Alternative C would have the same consequences as Alternative B for the repair of the first five sites from MP 6.0 to MP 14.4. The last three damaged sites would have no repairs and would have similar consequences as Alternative A, No Action.

Law enforcement, fire patrols and fire fighters, search and rescue and administrative staff would be able to respond to incidents in the same timeframe as prior to the flood up to the junction of Road 26 and 2680. The installation of a gate on Road 26 just past the junction with Road 2680 would continue to allow emergency and administrative vehicle access to MP 20.8. There would be no vehicle access on the last two miles of Road 26.

Risk of Future Washouts

The risk of future washouts would be the same as Alternative B for the first five sites, and the same as Alternative A for the last three sites.

Cost of Repair and Future Maintenance and Repairs

The cost of repairs for Alternative C would be approximately $3.2 million. Future maintenance costs would be similar to pre-flood conditions for those sections of road that are reopened (Roads 26, 2680, and 260014). Future maintenance costs on the section of Road 26 beyond the Road 2680 junction would be similar to Alternative A costs with administrative access to MP 20.8 Future repair costs would be lower than the past or present costs, with the expectation that the proposed repairs will greatly reduce the risk of future flood damage at the first five sites.

Summary

Alternative C would restore vehicle access for tribal, private, and public, and administrative use of all of Roads 2680, and 2600014, and a portion of Road 26. The repairs would contribute toward the management of the National Forest System roads, and would be partially consistent with the Forest Plan, the Forest Roads Analysis, and the Access and Travel Management Plan.

Road and Access Cumulative Effects

The other project in the Suiattle Watershed currently affecting vehicle access is Road 26 improvements from the American Recovery and Reinvestment Act of 2009 (ARRA) work), which includes intermittent sites between MP 0.0 and 10.0. This project will have short term closures but it is scheduled for completion in summer of 2012, so there would be no overlap with the proposed flood repair work. Other projects proposed in the Suiattle River drainage (Suiattle Access Travel Management EA) are yet to be funded so timing of the road decommissioning on the south side of the Suiattle and other road repairs is not known. These projects would not affect access on Road 26, but Alternative A could affect access to these projects, if MP 6.0 is impassable by the time they are implemented. Road maintenance activities are planned on Road 26, but they do not affect vehicle access.

Forest Plan Consistency

The action alternatives would provide varying degrees of access and therefore, varying levels of support for meeting Forest Plan goals and objectives for Forest road infrastructure in the drainage. The action alternatives are either fully or partially consistent with the Forest Plan standards and guidelines for roads

management, Road Maintenance levels and the Access and Travel Management Plan for the Suiattle River drainage.

Skagit Wild and Scenic River Affected Environment

The Suiattle River segment of the Skagit Wild and Scenic River system is 27.4 miles in length. This designation extends from its confluence with the Sauk River north of Darrington, east to the boundary of the Glacier Peak Wilderness Area near Milk Creek. The designation encompasses a river corridor approximately one-quarter mile wide, on each side of the river channel. See the River Management Plan, Final: Skagit River (USDA Forest Service 1983) for a detailed boundary description.

The Suiattle River occupies a broad floodplain formed by high sediment loads carried from streams draining Glacier Peak. It is a naturally dynamic system that has been affected by record flooding in the last 25 years. Forest Road 26 runs parallel to the Suiattle River for most of its length and the road pre-dates the river's wild and scenic designation (1978). The road is located above the floodplain on an old river terrace and much of the recent flood damage to the road resulted from undermining of this terrace, not overland flow.

The Skagit Wild and Scenic River Study Report (USDA Forest Service 1977) found the Suiattle River eligible to be included in the Skagit System with the classification of Scenic due to the forested shoreline, a low percentage of paralleling roads, and the overall scenic nature of the area. The Interagency Guidelines for Eligibility, Classification, and Management of River Areas (47 FR 39454) provides classification criteria for Wild and Scenic Rivers. Scenic segments may be accessible in places by road; roads may occasionally reach or bridge the river. Short stretches of conspicuous or longer stretches of inconspicuous roads (or railroads) are acceptable (47 FR 39454, Sec. III, Table 2).

The river is free-flowing (with no impoundments) and the water quality of the river is high and unimpaired. Section 16(b) of the Wild and Scenic Rivers Act defines free-flowing: *Free-flowing as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.*

The Skagit Wild and Scenic River system is managed to protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values (fisheries, wildlife, and scenic quality) for which the river was designated, while providing for public recreation and resource uses that do not adversely impact or degrade those values.

Outstandingly Remarkable Values

The Suiattle, like all the rivers in the Skagit Wild and Scenic System, possesses the outstandingly remarkable values of fish, scenery, and wildlife (USDA Forest Service 1977). The Skagit system is one of the least developed river basins in Puget Sound and thus retains habitat that is relatively intact and functioning, and scenery that is largely natural.

The values of the Suiattle River were not distinguished from the other rivers in the study; they are discussed below in general terms.

Fishery

As discussed under Fisheries, there are three federally-listed fish species in the Suiattle River basin: (Chinook salmon, steelhead and bull trout). Coho salmon, a Regional Sensitive Species and candidate for federal listing, is also found, along with: sockeye, pink salmon, coastal cutthroat trout, and from limited observation, chum salmon.

Wildlife

Wildlife species of interest in the project area include the following federally-listed threatened and endangered species: grizzly bear, northern spotted owl, marbled murrelet, and potentially gray wolf. Bald eagle (Regional Forester Sensitive Species) use of the Suiattle River system correlates with anadromous fish runs, with highest eagle use in the winter months along the main stem of the Suiattle River. Three Eagle night roosts are known in the vicinity of the Boundary Bridge (Milepost 10) with peak numbers of eagles counted in the swamp area of Conrad and All Creek during the Coho season. Other species include Forest Management Indicator Species (deer, mountain goat, pine marten, and woodpeckers) and Regional Forester Sensitive Species (Townsend's big-eared bat and wolverine). Wolverine use in the project area is expected to be minimal due to low elevation of the project area and the high levels of human use. Some land birds, including neo-tropical migratory birds, use the mixed conifer/deciduous forests found in the project area.

Scenery

The scenic values of the river are outstanding. Mountain peaks, avalanche chutes, glaciers, and steep rugged forested slopes are visible in the background. The foreground views include tributary streams, side channels, large conifers, stands of cottonwood, alder, rustic campsites, small clusters of recreation residences, and a developed campground adjacent to the river. Forest management activities are occasionally visible from the Suiattle River, particularly downstream of All Creek where timber management has occurred since the 1930s.

River Recreation

The River Management Plan, Final: Skagit River (USDA Forest Service 1983) divides the Suiattle River into two segments, lower and upper, for the purpose of analyzing aquatic based river activities, primarily boating. The division break is at the Boundary Bridge (Forest Road 25). The Plan further segregates use by commercial and private users by season.

Commercial use is by Special Use Authorization. Commercial outfitters and guides are permitted to provide guided whitewater rafting on the lower Suiattle. An informal launch is located at the northeast end of the Boundary Bridge. The take out for lower Suiattle excursions is located at the Lower Sauk Boat Launch adjacent to the Highway 530 Bridge on the Sauk River.

The following table lists seasonal limits for the Suiattle River (River Management Plan, Final: Skagit River (USDA Forest Service 1983 Volume II, page 49).

Table 3: River Segment Use Limits

Segment	Commercial Use	Unregulated Non Commercial Use	Total
Upper Suiattle	2,300	2,300	4,600
Lower Suiattle	3,000	1,600	4,600
Winter Use	900	N/A	

The currently authorized annual commercial use is 903 user days/year for the lower Suiattle with no use days authorized for the upper Suiattle. (March 5, 2010 MBS DN-FONSI Aquatic Outfitter and Guiding). Actual reported commercial use is under 100 user days/year since 2006 compared with an average of approximately 450 user days/year previously. There are no commercial permittees on the upper Suiattle

due to the frequency of logjams and obstacles in the river and more recently the lack of access. Private boaters historically utilized access points near Downey and Sulphur Creeks to boat the upper Suiattle. Boater use of the upper Suiattle is cyclical; in years immediately following large storm events the upper Suiattle is less likely to be used due to large amounts of wood debris, logjams, sweepers and strainers.

3.3 Skagit W&SR Environmental Consequences

For specific effects on fish, water quality, and wildlife related to this project, refer to those sections. None of the proposed repairs would threaten the free flowing characteristics of the Suiattle River because they are all outside the bed and bank of the Suiattle River. The visual characteristics of the Suiattle River would be retained.

3.3.1 Alternative A (No Action)

If Alternative A were implemented, the river banks at Site #1 through #6 would likely continue to erode. Road 26 and the temporary road adjacent to those sites would eventually destabilize and erode away as the river progressively undercuts the toe of the slope and the river terraces below the road.

The bridge crossings at Downey and Sulphur Creeks (Sites #7 and #8) would have no repairs at this time. Fills and approaches to the existing bridge piers would continue to erode from lateral movement and fluctuations of the creeks, which would eventually destabilize the piers. If implemented, Alternative A would have no effect on the free-flowing characteristics of the Wild and Scenic River.

This alternative is not likely to adversely affect the scenic quality of the river. Natural and management caused slides are common along the Suiattle River corridor. The erosion of the slopes and river terrace at Sites #1 to #6 is similar to other known sites along the Suiattle River.

The gate at Site #2 would be retained with no recreational vehicle or boat access available past that point, making launch sites beyond that point unavailable to boaters.

3.3.2 Alternative B

If Alternative B were implemented, the proposed repairs would protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values of the Suiattle River. Alternative B would include relocating the road away from the Suiattle River at Sites #1, #3, #4 and #5 to reduce the risk of repeat washouts. Site #2 would relocate on to bedrock and Site #7 and #8 are not on the Suiattle River. Alternative B would include: minimizing impacts to spawning habitat at MP 20.8 by shifting the road into the hillslope so as to not add fill to the river channel below the damaged site (#6), extending the bridge at Downey Creek and removing the floodplain fill and culvert at the bridge approach to Downey Creek, and increasing the channel width span under the Sulphur Creek Bridge.

The proposed repairs are designed to avoid the repeated washouts (and resultant effects) that Road 26 has experienced in past flood events. By moving the road alignment away from the river and constructing repairs as far above the active channel (out of the river bed) as analyzed and practical, there would be minimal if any constriction of the floodplain.

The effects on water quality are expected to be short-term and minimal compared to background sedimentation rates; see *Effects, Water Quality*.

The effects on fisheries would be short-term, related to short-term increases in noise and sediment during construction; see *Effects, Fisheries*, above.

If implemented, Alternative B would convert about four acres of mature forests that currently do not provide suitable structure for nesting spotted owls or marbled murrelets. The loss of these constituent elements will not adversely affect the critical habitat unit's ability to contribute to the recovery of spotted owls or marbled murrelets. Changes in wildlife habitat and wildlife populations would be slight due to the small amount of habitat change, and the change occurring in very small areas separated by relatively large distances. There are no significant effects to wildlife beyond a temporary increase in noise; see *Effects, Wildlife.*

The roadway and views would be similar in character to the pre-flood condition and the scenery would not be altered significantly beyond the construction site. Any bare soils resulting from construction activities would be stabilized and revegetated to minimize erosion potential. At reroute sites, the conditions would remain unchanged. The reroute at Site #5 (MP 14.4) would have a cleared slope upslope from the river of less than 2 acres. The Suiattle Watershed Analysis (USDA Forest Service, 2004) discusses disturbances in the forest landscape. Openings of up to 5 acres in size are frequent in the Suiattle River watershed from root rot pockets, other disease elements or blow down so a small opening would not create a visually disparity (USDA Forest service, 2004 – page 51 of Chapter 2). Road repairs at Site #2 and #6 would shift the road away from the river, but look similar to natural occurring slides frequently encountered along the river. The bridge repair sites would be screened from view by vegetation and would not look much different than before the flood.

Access to the river at Downey and Sulphur Creeks would be restored and maintained and could provide for commercial and private boater use.

3.3.3 Alternative C

Alternative C would have the same consequences as Alternative B with repairs of flood damaged sites at MP 6.0 through to MP. 14.4. With Road 26 blocked at the junction with Road 2680, the environmental consequences of Alternative C for the Upper Suiattle would be as described in Alternative A, the No-Action alternative.

The damaged site at MP 20.8 (Site #6), and the bridge crossings at Downey and Sulphur Creeks (Sites #7 and #8) would have no repairs at this time. Fills and approaches to the existing bridge piers would continue to erode from lateral movement of the creeks, eventually destabilizing the piers. It is supposition at best to predict the long-term effect of this destabilization on the piers, but they could eventually collapse into the creek or along the stream bank.

If implemented, Alternative C would have no effect on the free-flowing characteristics of the Wild and Scenic River. This alternative is not likely to adversely affect the scenic quality of the river. Natural and management caused slides are common along the Suiattle River corridor. The erosion of the slopes and river terrace at Site #6 is similar to other known sites along the Suiattle River.

Wild and Scenic Rivers Cumulative Effects

The list of past, other current, and reasonably-foreseeable future projects in the vicinity of the proposed Forest Road 26 repair project was reviewed (See Appendix H), in relationship to the Wild and Scenic Rivers. It has been determined that there are no cumulative effects from this project specific to Wild and

Scenic Rivers, other than those cumulative effects addressed under other resources areas (aquatic resources and soils, fisheries, and wildlife). Wild and Scenic River values are protected and enhanced because the proposed action alternatives would improve conditions in the floodplain over the pre-flood conditions.

Forest Plan Consistency

The Skagit Wild and Scenic River system is managed to protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values (fisheries, wildlife, and scenic quality) for which the river was designated, while providing for public recreation and resource uses that do not adversely impact or degrade those values.

The proposed repair of Suiattle Road 26 restores access to the upper Suiattle River in a manner that is consistent with the protection clause of the Wild and Scenic Rivers Act and the Forest Plan. All action alternatives protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values of the Suiattle River segment of the Skagit Wild and Scenic River system.

3.4 Recreation Affected Environment

Recreation on or accessed by this portion of Suiattle Road 26 includes developed camping, dispersed camping, hiking, backpacking, mountain climbing, driving, river rafting, hunting, fishing, mushroom picking, berry picking, mountain biking, snow shoeing, cross country skiing, snowmobiling, and other dispersed activities. The Suiattle Road 26 is a major entry point into the Glacier Peak Wilderness and the Pacific Crest National Scenic Trail (PCT) where recreation activities include hiking, backpacking, mountain climbing, horseback riding, fishing, hunting, and camping. Recreation on the river is covered under the Wild and Scenic River section.

Recreation Opportunity Spectrum (ROS) is a conceptual framework for defining types of recreation opportunities, physical settings, and experiences a visitor can expect. There are six ROS classes. The Suiattle River Road 26 is within a Roaded Natural ROS. A Roaded Natural area is characterized by predominately natural appearing environment with moderate evidence of man, resource modification and utilization practices are evident, conventional motorized use is allowed.

Developed Recreation

Buck Creek Campground (about MP 15, just beyond Site #5) and Sulphur Creek Campground (adjacent to Site #8) were under a concessionaire agreement with Recreation Resource Management for operation and maintenance through 2007. Sulphur Creek Campground has not been accessible by vehicle since October 2003 due to the Road 26 flood damages at Downey Creek Bridge. Buck Creek campground has not been accessible by vehicle to the public since the fall 2006 floods. Prior to the loss of access, the campgrounds were open for use at least from Memorial weekend to Labor Day with fees for camping. Buck Creek Campground has 25 campsites. Sulphur Creek Campground has 20 campsites, but the lower couple sites along the river have been damaged during flood events. The following table displays campground use figures that were collected by employees of Recreation Resource Management during the operating periods. Hoodoo Recreation Services is now the concessionaire of the MBS campgrounds, but has not had Buck Creek or Sulphur Creek Campgrounds open due to the lack of road access.

Table 4: Campground Annual User Days

Year	Buck Creek User Days*	Sulphur Creek User Days	Buck Creek Revenue	Sulphur Creek Revenue

2011	0 known	0 known	0	0
2010	0 known	0 known	0	0
2009	0 known	0 known	0	0
2008	0 known	0 known	0	0
2007	0 known	0 known	0	0
2006	1,954	0 known	$9,255	0
2005	1,929	0 known	$8,710	0
2004	1,200	0 known	$5,762	0
2003	2,574	1,043	$8,845	$3,291
2002	6,502	2,530	$12,083	$3,808
2001	5,271	1,987	$7,244	$2,531
Annual Average 2001-2003	4,800	1,850	$9,390	$3,210
Annual Average 2004-2006	1,700	0	$7,910	$0
Annual Average 2007-20011	0	0	$0	$0

* User days - the annual total of the daily counts of people using the campground.

The Suiattle Guard Station (about MP 16) was constructed in 1913 and is listed on the National Register of Historic Places. It is located on a spur road off Suiattle Road 26, about one mile past the Buck Creek Campground. This structure is a part of the cabin rental program. It was rented out for 250 user days during May through November 2004 for a total of $5,400. This revenue was then available for maintenance and operation of the Guard Station. The Station has been closed for rental starting in 2007 due to the road damage and lack of public access.

Dispersed Recreation

Dispersed campers generally camp near their vehicles and use spur roads and open areas for camping sites along the valley bottom. The old Downey Creek and East Buck Creek Campgrounds, which were decommissioned in the 1980s, are also used for dispersed camping. According to the Motor Vehicle Use Map for the Mt. Baker-Snoqualmie National Forest, dispersed camping is permitted within 150 feet of all system roads.

Road 26 provides driving for pleasure and scenery. The road provides access during the spring and fall for gathering wild mushrooms and the summer months for picking wild berries as well as other forest products. During the winter, the Suiattle Road provides low-elevation access for snowmobiling, backcountry skiing, and snow play. Hunting game and fishing are also popular seasonal pastimes that use Road 26 for access.

Since the 2006 flood there has been little dispersed use on the ten miles of Road 26 past Site #2 (MP 12.6) since it is closed to public vehicles. Some hiking and biking has occurred since closure as evidenced by vehicles parked at the closure gate and hiking reports on the web. It was reported that a few stock users have been on the closed road. The closed road has been maintained to Downey Creek for administrative access and on-going trail contracts on the PCT in the upper Suiattle River drainage (contracts completed September of 2011).

Trails and Wilderness

Seven trailheads affected by the proposed project are Huckleberry Mountain, Green Mountain, Buck Creek, Downey Creek, Sulphur Creek, Sulphur Mountain and the Suiattle Trailhead. The Suiattle Trailhead is one of the most important trailheads on the Mt. Baker-Snoqualmie National Forest as it provides access to many different trails within a large swath of the Glacier Peak Wilderness and provides connections to the PCT and the small mountain communities of Trinity, Holden, and Stehekin. Because of these connections the Suiattle trailhead is also the most important west side access point for equestrians as well as hikers. The Congressionally designated Glacier Peak Wilderness makes up 70 percent of the entire Suiattle Watershed. Primary wilderness use is on trails including the PCT. Five commercial guides operate there under permit, providing backpacking trips.

The following table lists trails that are accessed from the trailheads affected by this project.

Table 5: Affected Trails (Forest Plan Trail Inventory)

Trail Number	Trail Name	Primary Objective	Difficulty Level	Use Level	Area	Miles
768	Downey Creek	Stock	More Difficult	Medium	Non wilderness	0.4
768.01	Downey Creek	Stock	More Difficult	Medium	Glacier Peak Wilderness	6.2
780	Huckleberry	Stock	More Difficult	Low	Non Wilderness	5.5
780.01	Huckleberry	Stock	More Difficult	Low	Glacier Peak Wilderness	1.5
781	Buck Creek	Hiker	Easiest	Low	Non Wilderness	1.0
782	Green Mountain Lookout	Stock	More Difficult	Heavy	Non Wilderness	1.0
782.01	Green Mountain Lookout	Stock	More Difficult	Heavy	Glacier Peak Wilderness	3.0
793	Sulphur Creek	Hiker	Easiest	Low	Non Wilderness	0.2
793.01	Sulphur Creek	Hiker	Easiest	Low	Glacier Peak Wilderness	1.6
784	Suiattle River	Stock	Easiest	Heavy	Glacier Peak Wilderness	10.8
785	Miner's Ridge	Stock	Easiest	Heavy	Glacier Peak Wilderness	9.9
785.1	Image Lake hiker	Hiker	Easiest	Heavy	Glacier Peak Wilderness	0.6
785.2	Backpacker Camp	Hiker	Easiest	Heavy	Glacier Peak Wilderness	0.1
985.3	Miner's Ridge Lookout	Stock	Easiest	Medium	Glacier Peak Wilderness	0.1
986	Dusty Ridge	Hiker	More Difficult	Low	Glacier Peak Wilderness	3.5
987	Sheep Camp	Stock	More Difficult	Medium	Glacier Peak Wilderness	1.0
788	Grassy Point	Stock	More Difficult	Medium	Glacier Peak Wilderness	3.5
789	Buck Creek Pass	Stock	More Difficult	Heavy	Glacier Peak Wilderness	5.0
790	Milk Creek Trail	Stock	More Difficult	Heavy – Low since 2003	Glacier Peak Wilderness	6.5
791	Gamma Way	Hiker	More Difficult	Low	Glacier Peak	6.0
792	Triad Creek	Hiker	More Difficult	Low	Glacier Peak Wilderness	4.7
794	Sulphur Mountain	Stock	More Difficult	Low	Glacier Peak Wilderness	5.0
795	Miner's Cabin	Stock	Easiest	Medium	Glacier Peak Wilderness	2.1
797	Canyon Lake	Hiker	Difficult	Low	Glacier Peak Wilderness	7.0
798	Upper Suiattle	Hiker	More Difficult	Low	Glacier Peak Wilderness	4.0

Trail Number	Trail Name	Primary Objective	Difficulty Level	Use Level	Area	Miles
798.1	Upper Suiattle River	Hiker	More Difficult	Low	Glacier Peak Wilderness	3.0
799	Flower Dome	Stock	More Difficult	Low	Glacier Peak Wilderness	1.0
2000.01 – 2000.05	Pacific Crest National Scenic Trail (Suiattle Pass To Fire Creek Pass)	Stock	More Difficult	Heavy	Glacier Peak Wilderness	26.9

The October 2003 flood washed away portions of the Suiattle River Trail, three major trail bridges on the PCT within the Suiattle drainage and the Suiattle River Bridge on the Milk Creek Trail. Contracts for repair of the Suiattle Trail, Suiattle Bridge on the Milk Creek Trail, and the Downey Creek Trail were awarded with all scheduled for completion by the end of 2007. The lack of full access to trailheads from 2003 to 2006, and the additional damage with loss of access in 2006 resulted in the termination of the Milk Creek Trail contract and a contract time extension on the Downey Creek project. Major work was completed on the Suiattle Trail in 2006. Contracts were awarded to repair the PCT in Milk Creek (2007) and the upper Suiattle River (2009). Final work on the contracts was completed in September of 2011.

Damage to roads and trails has caused a substantial decline in climbing on Glacier Peak. As the fourth tallest volcano in Washington, Glacier Peak attracted many climbers. The majority ascended via the White Chuck Trail and Sitkum Glacier route. With the loss of trail and road access in the White Chuck valley, use on that route has all but vanished. Another popular summit route was the Frostbite Ridge route accessed by the Milk Creek Trail or the PCT. Due to the loss of access via the Milk Creek Trail and the much longer approach on the PCT, this route has also become much less popular. Most climbers now ascend the south side route from White Pass which is reached on the North Fork Sauk Trail or from the Little Wenatchee Trailhead. Use on this route has likely increased since 2003.

The following table shows estimated number of annual trail users before the flood for the three trailheads (Suiattle, Green Mountain, and Downey Creek) where trail registration boxes are maintained. The basis for the trail use figures is from the self-registration forms and box maintained at many trails. Not all trail users sign in on the register, so an adjustment is made to estimate the number of users who do not register to more accurately represent actual use. This is referred to as the registration compliance rate. An assessment was done in 1999 to 2000 with statistical sampling using automatic trail counters and human counters to calculate compliance rates for the Boulder River, Lake 22, and White Chuck trail registers on the Darrington District. For example, Boulder River Trail was a highly used day hike with 44% of the trail users signing the registration. Lake 22 Trail had a similar low rate of self-registration at 41%. On the White Chuck Trail, which is a different type of trail with major multi-day trips and Glacier Peak climbing trips, had a rate of 83% of the trail users registering. The use of the Suiattle Trail is most similar to the White Chuck Trail so a compliance rate of 83% was used for the period 1998 to 2003. No registration or trail use data is available for the other trailheads, either before or after the flood events.

The public was notified of the flood damage and inaccessibility to the many road, trails, and recreation sites, and use has declined dramatically as observed by Forest Service staff (few cars at the road closure and few hikers seen by the Miners Ridge lookouts). Some visitors have ventured out on Road 26 as has been noted by vehicles parked at the road closure barrier. The extent of visitor use of just Road 26 or the trails beyond is unknown, with trailhead registers providing the following estimates. No registration compliance rates have been applied to the data collected after 2003, since the road was closed which drastically changed the use, and the registers were not maintained on a regular basis.

Table 6: Annual Trailhead Users Estimates

Trailhead	1998- 2003	2004-2006	After 2006
Suiattle	1,650	163	93
Green Mountain	1,765	1,414	19
Downey	374	341*	60

*1 year of data

From 2004 to the fall of 2006, Suiattle Road 26 was open to Downey Creek near MP 20 so the Green Mountain and Downey Creek Trailheads were fairly accessible by vehicle. Since 2007 the road has been closed before MP 12.6 making it a very long hike just to reach the trailheads, resulting in greatly reduced use.

Huckleberry Trail

The beginning of the Huckleberry Trail changed starting with the 2003 flood that eroded the road and trailhead at MP 14.4 (Site #5). The temporary road bypass construction further impacted the beginning of the trail, resulting in the need for temporary trail repairs until final trail relocation were completed in 2011. The trail now begins at the east end of the MP 14.4 damage site. The existing trailhead and parking is between the damage site and the new trail location.

Suiattle/Pacific Crest National Scenic Trail

The Suiattle Road 26 is a major west side access point to the PCT between Stevens Pass (US-2) and Rainy Pass (SR-20), a distance of 122 trail miles. Formally, this distinction went to the White Chuck Trail, however due to flood damage the upper 5 miles of the White Chuck Road 23 and the White Chuck Trailhead were decommissioned in 2011. PCT access is no longer an option via this route. The PCT is reached by the 7 mile long Suiattle Trail. The Pacific Crest Trail and the Appalachian Trail were the original two trails designated as *Scenic Trails* under the National Trails System Act of 1968. The PCT connected the Skyline Trail in Oregon, the Cascade Crest Trail in Washington, the John Muir Trail in the Sierra of California, and other trails into one trail, approximately 2,650 miles in length between the Mexican and Canadian borders. The portion of the PCT referred to in this document, travels through the western portion of the Glacier Peak Wilderness.

In past years, when road access was possible to the Suiattle and White Chuck Trailheads and bridge crossings were in place, the greatest use of this section of the PCT came from hikers and equestrians who were doing relatively short trips into the high country around Glacier Peak. Using the North Fork Sauk, White Chuck, and Suiattle River roads as access points, different loop and one way trips were possible with the PCT as the backbone that connected these trails. With the decommissioning of the White Chuck Road and repairs still needed on the Suiattle and North Fork Sauk Roads, this use pattern has disappeared.

The Suiattle Trailhead provides access to the most interconnected trail system on the Forest. Connections to the Buck Creek Pass, Railroad Creek, Agnes Creek, and PCT allow users to travel, on foot or horseback, to the Wenatchee National Forest (Trinity, Holden Village) and the North Cascades National Park (Stehekin). The PCT provides access south towards Stevens Pass and north to the North Cascades National Park and Canada. The Miners Ridge Trail accesses the Image Lake area, known as one of the scenic icons of the Wilderness Preservation System.

Downey Creek Trail

Downey Creek Trail extends up the valley bottom of Downey Creek for about 6 miles to its end at Bachelor Creek crossing. This section of trail is popular among anglers who fish the creek, or those wanting to visit an intact old-growth forest. At Bachelor Creek, the primitive Bachelor Creek Trail climbs steeply to its end at Cub Lake. The end of the trail is also the beginning of the exit point of the popular Ptarmigan Traverse. The Ptarmigan Traverse is one of the best known alpine high-routes in western North America. The route begins at Cascade Pass in the North Cascade National Park and quickly ascends to a narrow col above the Cache Glacier to enter the Glacier Peak Wilderness. The route takes mountaineers several days to cross the glaciers, moraines and meadows among the high peaks of the Cascade Crest. The trailless portion of the route ends at Cub Lake and mountaineers end their trip at Downey Creek. The route is normally done north to south so a vehicle shuttle is needed from the Suiattle Road back to the starting point at Cascade Pass. The additional road walk of the past several years has added a day onto the trip for most parties.

Glacier Peak Wilderness

Suiattle Road 26 provides access to the Glacier Peak Wilderness. At 573,000 acres, Glacier Peak is the largest National Forest wilderness in the Pacific Northwest. The Glacier Peak Wilderness offers some of the most spectacular mountain terrain within the entire wilderness system. With elevations ranging from 1,100 feet at the edge of Lake Chelan to the 10,541 foot crest of Glacier Peak and a wide range of precipitation, it is also a mountain environment with tremendous diversity. The area features numerous glaciers, hundreds of high mountain lakes and low elevation valleys with stands of magnificent old growth forest. The rugged mountains of this part of the North Cascades put severe limits on the ability to construct and maintain trails. As a result, with an average of about 0.74 mile of trail for every 1,000 acres of land (on the MBS portion of the wilderness), trail access to the wilderness is relatively limited. Large areas without any trails are centered on the north and northwest portions of the wilderness and offer some of the most remote and least visited mountain areas in the Northwest.

The Glacier Peak Wilderness makes up 70 percent of the entire Suiattle Watershed. Primary wilderness use is on trails including the PCT. Five commercial guides operate under permit, providing backpacking trips.

3.4.1 Recreation Environmental Consequences

Developed Recreation

3.4.1.1 Alternative A (No Action)

Alternative A, if implemented, would mean no repairs would be made at this time to the damage sites. There would continue to be vehicle access past Site #1 (MP 6.0), but there would not be any vehicle traffic past Site #2 (MP 12.6). There would not be any vehicle access to Buck Creek or Sulphur Creek Campgrounds so there would be very little use of the developed campgrounds. The estimated annual loss of 1,850 user days (average use prior to 2003 flood) at Sulphur Creek Campground due to the lack of vehicle access would continue. Very few people are using Buck Creek Campground since the 2006 flood event and road closure at MP 12.6 made it a 1.5 mile hike to the campground. It is estimated that hike-in use would continue at very low levels since the road would not be fixed. The average annual use at Buck Creek Campground was 1,550 for the years 2004 and 2005, while the pre-2003 flood use was 4,800 user-days annually. This estimated annual loss due to the lack of vehicle access would continue.

The Suiattle Guard Station would remain closed to the public. Vandalism has occurred since the 2006 floods closed the road at MP 12.6. Additional work was done to repair the facility, but further vandalism could occur.

These recreation facilities would remain closed at this time due to the lack of vehicle access. No maintenance has been conducted on these facilities since 2003 and no future maintenance would be conducted if this alternative were chosen. The facilities would continue to deteriorate.

3.4.1.2 Alternative B

If implemented, this alternative would restore vehicle access to the end of Road 26 and use would likely return to levels that existed prior to the flood (based on average of 2001 to 2003):

- Sulphur Creek Campground-1,850 user days annually,
- Buck Creek Campground-4,800 user days annually, and
- Suiattle Guard Station-250 user days annually (2004 data).

Hoodoo Recreation Services would operate and maintain the Sulphur Creek Campground and Buck Creek Campground. The Suiattle Guard Station would be repaired and open for rental by the public and provide a unique experience in the Suiattle River drainage.

3.4.1.3 Alternative C

This alternative would provide drivable access to the junction of Road 2680, re-establishing motorized access to the Buck Creek Campground and the Suiattle Guard Station, but not to the Sulphur Creek Campground. Use at Buck Creek Campground and the Suiattle Guard Station rental cabin are expected to return to levels that existed prior to the flood:

- Buck Creek Campground-4,800 user days annually (average of 2001 to 2003), and
- Suiattle Guard Station-250 user days annually (2004 data).

Sulphur Creek Campground would remain closed at this time due to the lack of vehicle access and the facilities would continue to deteriorate due to lack of maintenance.

Dispersed Recreation

3.4.1.4 Alternative A (No Action)

With No Action, vehicles would continue to use the temporary reroute at Site #1 (MP 6.0) and drive to Site #2 (MP 12.5) where the road is gated. The last 10.6 miles of Road 26 would remain closed to recreational vehicles, as would the 5.8 miles of Road 2680 to the Green Mountain Trailhead.

Scenic driving, snowmobiling and dispersed car camping would remain unavailable on 16.4 miles of Road 26 and 2680. Other dispersed recreation activities such as fishing, hunting, berry picking, and mushrooming would continue to be reduced as well, because of the extra distance to walk. A few people would hike, bike or use stock on the administratively closed roads. Hikers, bikers, stock users and visitors would probably use the roads to access trails and dispersed campsites until the roads become overgrown with vegetation. Dispersed recreation numbers would remain at greatly reduced levels from pre-flood numbers and continue to decline as lack of maintenance would further reduce access.

3.4.1.5 Alternative B

Alternative B, if implemented, would restore vehicle access to the end of Road 26 and dispersed recreation use would be expected to return to pre-October 2003 flood levels. The repair of the road would reestablish access on 16.4 miles of Road 26 and 2680 for driving for pleasure, access for passenger cars, and other dispersed recreation activities such as fishing, hunting, berry picking, mushrooming, snowmobiling, scenic driving, and dispersed camping (such as the Downey Creek site).

3.4.1.6 Alternative C

This alternative would provide drivable access to the junction of Road 2680, restoring 11.6 miles of road for driving for dispersed recreation. The closed portion of Road 26 beyond Road 2680 (approximately 4.8 miles) could be used by foot, bike, or stock to the Downey Creek Bridge, so there would likely be some dispersed camping at the Downey Creek Bridge. The two miles of road between Downey and Sulphur Creek would not be maintained, and dispersed recreation would be expected at reduced levels due to difficulty in accessing desired campsites beyond the Downey Creek Bridge. Decreased maintenance would result in road deterioration, which would then cause an additional decrease in use.

3.5 Trails and Wilderness

3.5.1 Alternative A (No Action)

With no action, the road would remain closed at Site #2, and decreased use of the Suiattle drainage trails would continue due to the lack of vehicle access on the damaged Roads 26 and 2680 to trailheads, resulting in lengthy walks on closed roads. MP 12.6 would continue to be a congested area with little area for turning vehicles around or parking for those continuing up the Suiattle on foot, bicycle or with stock. Seven trailheads would continue to be inaccessible by vehicle, with the road closure at Site #2, adding 10.6 miles for hikers accessing the trails at the Suiattle Trailhead. It is unknown how many walk the road for access, but the number of persons signing the Suiattle trailhead register has decreased from 1,605 users signing in before the 2003 floods to an average of 93 users per year since 2006. The distance to the Green Mountain Trailhead would continue to be 12 of road walking to reach the Green Mountain Trailhead.

Access to the PCT would be an extra 10.6 miles of road to hike. The road would continue to deteriorate due to the lack of maintenance or repairs, so access would become more difficult.

The current trail crossing at Downey Creek (utilizing the existing road bridge and trail approach extension) would remain which allows foot and stock access to reach the Downey Creek, Sulphur Creek, Sulphur Mountain and the Suiattle River Trailheads. Repairs to the Suiattle Trail and PCT were completed in 2011. With the trail repairs completed, it is expected that there would be an increase in the number of hikers and stock using Road 26 to reach the Suiattle Trailhead, but use would continue to be less than before the flood events since there is no vehicular access to the former trailhead. Access and use would continue to deteriorate over time, due to the lack of maintenance and repairs. Maintenance of the trails in the Suiattle drainage, including the PCT would continue to be difficult and possibly become dependent on helicopter support.

Use of the Green Mountain, Buck Creek, Downey Creek and Huckleberry Trailheads would continue to be limited. Fewer people would hike, bike, or ride stock the extra 11.6 miles to reach the Green Mountain Trailhead, so a permanent reduction in use would be expected. Huckleberry and Buck Creek Trailheads

would require walking on 1.8 to 2.4 miles of closed road to reach the trailheads so fewer hikers would choose to go there.

Access to the Glacier Peak Wilderness would continue to be difficult for some individuals with the extra 10.6 miles of road to walk.

Five land-based guides operate in the Suiattle drainage, providing backpacking trips. These outfitters continue to have longer access distances and more expenses with the access, and some have chosen to move their businesses to other more accessible areas.

3.5.2 Alternative B

This alternative would restore vehicle access to all 7 trailheads, restoring 10.6 miles of access for vehicle and stock trucks or trailers. Anticipated use of the Suiattle Trailhead would return to pre-October 2003 flood levels, estimated at 1,650 users annually. Use levels at the Green Mountain Trailhead would be expected to rebound to at least 1,750 users per year. Use at Downey Trailhead would be expected to return to an estimated pre-flood level of 350 use days annually. Hikers would be able to drive to the Buck Creek, Sulphur Creek, Sulphur Mountain, and Huckleberry Trailheads.

The Huckleberry Trailhead would retain the current parking area located on the river side of realigned Road 26 at MP 14.4. The Huckleberry Trail was reconfigured at the trailhead in 2011 to connect with the parking area on the east end of the proposed road realignment. The road realignment at MP 14.4 would retain access to the current parking lot and the reconfigured trailhead of the Huckleberry Trail. Use of the Huckleberry Trail and Trailhead would return to pre-flood levels.

This alternative would restore access to the newly repaired Suiattle and Pacific Crest Trails and the network of trails in Glacier Peak Wilderness. This would restore access to the road terminus where an existing developed parking lot is sized to accommodate the expected amount of both passenger vehicle and stock trucks/trailers. The Suiattle Trailhead, along with North Fork Sauk would be the only two remaining west-side portals to Glacier Peak Wilderness This alternative would restore access to a safe unloading area for stock use at the Suiattle Trailhead.

3.5.3 Alternative C

Alternative C would restore vehicle access to 3 trailheads. It is the same as Alternative B for restoring access to the Huckleberry, Buck Creek and Green Mountain Trailheads since Alternative C would provide drivable access to the junction and end of Road 2680. Alternative C would result in longer hikes to the trailheads beyond this junction, depending on the location of available parking. There would be an extended walk on Road 26 of at least 4.8 miles to reach the Suiattle Trailhead, approximately 2 miles to Downey Creek, and 4.5 miles to Sulphur Creek, and 4.7 mile to Sulphur Mountain.

Alternative C would not construct a new trailhead parking area for the Suiattle trails at the junction of Road 26 and 2680 since a decision to convert the road to trail on Road 26 beyond the junction is beyond the jurisdiction of FHWA and would need to be a future decision by the USFS. Due to the climbing turn at the junction of these roads, there is not a safe option for parking along the road at this location. Visitors wishing to hike to the Suiattle Trailhead would park along Road 26, back from the junction with Road 2680 (to the west), potentially creating a hazardous situation. Parked vehicles may interfere with drivers attempting to turn around at the blocked road intersection, and would reduce sight distance for those continuing up or coming back down Road 2680. There would be mixed foot and motorized traffic using the road before the blocked intersection with motorized traffic on Road 26 to Road 2680, foot traffic, bicycles, and stock on Road 26 from parked vehicles.

There would be no developed stock parking at the blocked road so stock users would park along Road 26, back from the junction (to the west) 0.5 to 1 mile where there is flatter ground and a wider road shoulder. The lack of separation of motorized traffic and stock unloading areas would present safety challenges for stock users and other visitors driving that section of road. Lack of maintenance and repair of Road 26 above the closure would cause the road and access to deteriorate and use to decline over time.

3.6 Accessibility

3.6.1 Alternative A (No Action)

With no action, no repairs would be made. Users of all abilities would continue to drive past Site #1, but would not be able to drive past Site #2 at MP 12.6. There are campsites and restrooms in both Buck Creek and Sulphur Creek Campgrounds that are accessible, but neither of the developed campgrounds would be accessed by motorized vehicle and would remain closed. The 17.54 miles of road currently closed would remain closed to public vehicles.

3.6.2 Alternative B

This alternative would restore vehicle access on the last 10.6 miles of Road 26 past Site #2. The repair of the road would reestablish driving access for all users and to the Green Mountain Trailhead and the Buck Creek and Sulphur Creek Campgrounds. Driving would be re-established on 17.54 miles of road.

3.6.3 Alternative C

This alternative would provide drivable access to the junction and end of Road 2680, increasing the amount of roads available for driving by 12.4 miles. The Buck Creek Campground would be drivable, but Sulphur Creek Campground and 4.8 miles of Road 26 would not.

Recreation Cumulative Effects

The cumulative effects area was the Suiattle River drainage and other access routes to the Glacier Peak Wilderness. Some of the access routes may originate in the adjacent Henry M. Jackson and Wild Sky Wilderness areas. The list of projects in Appendix F was reviewed for potential cumulative effects as well as road access actions in the Sauk River drainage, and the adjacent drainages of Illabot Creek and the White Chuck River drainage. The other projects in the Suiattle watershed affecting vehicle access and recreation were the repair of the Boundary Bridge on Road 25, road maintenance and culvert upgrade on Road 26 and Road 25. These projects do not overlap in time of repair. There are two fish passage culvert replacements on Road 26 scheduled for 2012 and paving patches of road within the first 10 miles. There is a potential for overlap of these activities in time, but the scale and scope of the impacts are localized and would not contribute to cumulative effects on recreation access and use. Road maintenance activities are planned on Road 26, but they do not affect recreation use or access.

Contracts for trail repairs on the Downey Creek Trail, the Suiattle Trail, and the PCT have been completed and would not overlap in time. Restoring vehicle access to trailheads and completing trail repairs would likely restore recreational use to levels similar to those prior to the two flood events

The floods of 2003, 2006 and 2007 damaged a great number of roads and trails in the Sauk, Suiattle, and White Chuck River drainages. The flooding greatly reduced recreational opportunities on the Darrington District. Roughly, half of the 367 miles of trails on the District were estimated to be affected by the flood due to road and trail damage. Repair of the damage sites would contribute to restoring recreational use to pre-flood levels and help distribute recreational use across the district and forest.

Decisions on road closures in the White Chuck River drainage and the Illabot Creek drainage would limit vehicle access and number of recreational portals to Glacier Peak Wilderness. The repair of Road 26 would contribute to retaining recreational access to Glacier Peak Wilderness, and dispersed recreation within the Sauk River drainage. Currently there is still a reduction in the amount of accessible trailheads on the Darrington District. Between 2003 and 2010 only the North Fork Sauk Road 49 was open to provide direct access to trails into west-side of the Glacier Peak Wilderness.

Anecdotal evidence suggests that hikers are still making their way through the Glacier Peak Wilderness on the PCT, starting at Stevens Pass and that many other hikers are entering the area from trailheads on the east side of the Wilderness, which now has the shorter access. This has been noted from the Trinity area (Buck Creek Trail) and possibly the Little Wenatchee Trailhead (pers. com. Stoehr and Morrow). A Forest Service volunteer wilderness ranger on Miners Ridge has noticed that most hikers in the area, in recent years arrive at this location from either Holden Village or Buck Creek Pass.

Many main roads are inaccessible for road dispersed recreation and vehicle access to trailheads. In October of 2011, the White Chuck Road 23 was re-opened only to Road 27, with the last 5 miles of road and the White Chuck Trailhead decommissioned. Much of the White Chuck Trail, formerly the most heavily used portal to the Glacier Peak Wilderness, was destroyed in the flood and not expected to be rebuilt in the foreseeable future. The North Fork Sauk Road 49 was closed for culvert upgrades so none of the three roads that are major portals to Glacier Peak Wilderness (the Suiattle, the White Chuck and Sauk) were open in 2011. This pattern will likely repeat in future years.

Forest Plan Consistency

The proposed repair of Suiattle Road 26 would restore vehicle access for recreation and administrative use of this portion of the Darrington District. The repairs would contribute toward management of the National Forest System roads, trails, and recreation facilities, consistent with the Forest Plan, Forest Roads Analysis, and Access and Travel Management Plan.

All Alternatives would provide varying degrees of access and, therefore, varying levels of support for meeting Forest Plan goals and objectives for recreation. Alternative B would be consistent with the Forest Plan, as amended, but the Alternative A and C would only partially support the Recreation Opportunity Spectrum (ROS) in the Forest Land Management Plan.

Recreation – Dispersed, p. 4-84 (1): Provide for a broad spectrum of ROS settings and recreational opportunities such as hunting, fishing, gathering forest products, viewing scenery, camping, hiking, floating, etc. The Suiattle Road 26 is within the ROS of Roaded Natural. Alternative B would fully meet the Roaded Natural ROS. Alternative C would partially meet the Roaded Natural ROS since conventional motorized use would not be allowed beyond MP 18.4, and Alternative A (No Action) would not allow motorized use beyond MP 12.6, and therefore would not fully meet the Forest Plan recreation spectrum of activities.

Recreation – Trails, pp. 4-90, 4-91 (7. Trailhead Policy) (b): A trailhead is a place where a trail connects with a road or navigable body of water. Trailheads are part of the transportation system and will be developed and maintained with Forest Roads Program funds. As a minimum, a trailhead will provide adequate parking for an average peak season weekend day's use. Only Alternative B provides adequate access to all seven trailheads by repairing and reopening the road. Alternative C provides adequate access for three trailheads while Alternative A does not provide adequate access for any trailheads.

Recreation – Wilderness, p. 4-101: Wilderness provides unique and highly favored recreational experiences, however, recreational use of wilderness must be closely managed and monitored to assure that degradation of resource values does not occur. All alternatives would provide for managed and monitored use.

The floods of 2003, 2006 and 2007 damaged a great number of roads and trails in the Sauk, Suiattle, and White Chuck River drainages. The flooding greatly reduced recreational opportunities on the Darrington District. Roughly, half of the 367 miles of trails on the District were estimated to be affected by the flood due to road and trail damage. Repair of the damage sites included in Alternative B would contribute to restoring recreational use to pre-flood levels and help distribute recreational use across the district and forest.

3.7 Fisheries Affected Environment

The Suiattle River is within the Sauk River sub-basin, a Tier 1 Key Watershed. Tier 1 Key Watersheds were selected for their direct contributions to the conservation of anadromous salmonids and bull trout, particularly by providing refugia for at-risk fish species. The Suiattle, downstream of the Wilderness boundary, is also part of the Skagit Wild and Scenic River Corridor and was added to the National Wild and Scenic Rivers system by Congress in 1978. Fisheries are one of the Outstandingly Remarkable Values for which this segment of the Suiattle River was designated as Scenic.

The 26 Road and the sites for the road repairs drain to the Suiattle River from several named and small, unnamed streams. Project work would occur near Downey Creek, Sulphur Creek, and an unnamed stream recognized in Williams et al. (1975) as Tributary 04-0811. Numerous other named and unnamed tributaries would be crossed to access the proposed project sites via Road 26.

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA), as amended, requires federal agencies to review actions authorized, funded, or carried out by them, to ensure such actions do not jeopardize the continued existence of federally listed species, or result in the destruction or adverse modification of designated critical habitats. The FHWA and the Forest Service consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) if projects could potentially affect listed species or designated habitats. The Forest Service is designated ESA lead for this proposal.

Fish Species of Interest

Table 7: Fish Species of Interest for the Suiattle Road Repair Project[3]

Species (Stock)	Status	Primary Utilization	Habitat Limitations and Concerns
Chinook salmon (Suiattle Spring)	NMFS–Listed threatened (3/99) [4] reaffirmed Threatened (6/05); Designated critical habitat (9/05) SaSI–Healthy (2003)	Suiattle mainstem to approximately RM 28.6; spawn in lower reaches of Big, Tenas, All, Straight, Buck, Circle, Lime, Downey, Sulphur, and Milk Creek	Floodplain modifications, mobile channel sediments, and natural and road-related sedimentation resulting in general lack of spawning habitat (less than 5 mi); poaching.
Coho salmon (Skagit)	NMFS–Candidate species of concern (4/04) USFS–Sensitive[5] SaSI–Healthy (2003)	Suiattle mainstem to approximately RM 27.2; spawn and rear in most tributaries. Increasing trend in recent years for returning adults (Skagit coho stock).	Floodplain modification, side channel connectivity, culvert barriers in lower watershed. Overwintering habitat (e.g., off-channel habitats)
Pink salmon (Skagit)	NMFS–Not Warranted (10/95) SASSI–Healthy	Mainstem tributaries up to Milk Creek (RM 28.6): Big, Tenas, lower All, lower Boundary, lower Conrad, Straight, Buck, Circle, Lime, Downey, Sulphur, and Milk creek.	Though escapement is increasing, sedimentation (natural and management-influenced) limits spawning habitat.
Chum salmon (Sauk Fall)	NMFS–Not Warranted (3/98) SASSI–Healthy(2002)	Very limited observations document spawning in lower Suiattle to approximately RM 1.6	Sedimentation (natural and management-influenced) of spawning areas; generally steep gradients.
Steelhead (Sauk Winter)	NMFS– Listed threatened (5/07) critical habitat not yet designated SaSI–Depressed (2003)	Presumed spawning in Sulphur and up to Canyon (RM 32.3); documented spawning in many tributaries up to Downey (RM 24.4): lower Big, Tenas, All, Straight, Black, Conrad, Buck, Circle, Lime, Captain, and Downey Creek.	Limiting factors not well-known, likely include lack of off-channel habitats and sedimentation
Sockeye salmon (riverine; not Baker R. stock)	NMFS–Not Warranted (Baker River stock in Skagit; 3/99) USFS–Sensitive	Mainstem tributaries up to Sulphur Crk (RM26.3); presumed spawning in lower Tenas, known spawning in lower Buck, Downey, and Sulphur Creek.	Riverine sockeye are not a distinct stock and are not routinely inventoried; limitations have not been determined.
Coastal sea-run cutthroat trout	NMFS–Not Warranted (4/99) USFS–Sensitive SaSI–Unknown (2000)	Anadromous form known in lower Big, All, Boundary Ck. Pond, Marsh/Swamp, and likely others; resident form in Grade, Canyon, and other tributaries	Limited by steep gradients and lack of low-gradient off-channel habitats. Distribution information is limited.

[3] Table is updated from Suiattle Watershed Analysis, USDA Forest Service 2004; 2 All listings are documented in the Federal Register; citations are included in the Literature Cited section.

[4] Source is USDA Forest Service 2004a.

[5] Abbreviations: NMFS—National Marine Fisheries Service; USFS—United States Forest Service (USDA Forest Service 2004a); USFWS—United States Fish and Wildlife Service; SASSI—Washington State Salmon and Steelhead Stock Inventory (WDF et al. 1993; WDFW and WWTT 1994); SaSI—Washington State Salmonid Stock Inventory Washington Department of Fish and Wildlife (WDFW) 1998, WDFW 2000, WDFW and WWTT 2003 draft).

Species (Stock)	Status	Primary Utilization	Habitat Limitations and Concerns
Bull trout	USFWS–Listed threatened (11/99) Reaffirmed Threatened (4/08) Designated Critical habitat (9/05) SaSI–Healthy (1998)	Suiattle mainstem to approximately RM 42.3; spawn in larger tributaries (Big, Tenas, Straight, Buck, Circle, Lime, Downey, Sulphur, Milk, Canyon, Vista, Miners, Dusty, Small, plus some unnamed)	Population appears robust, though limitations include quantity of large pools and forage, and declining estuarine conditions.

Chinook (Oncorhynchus tshawytscha), coho (O. kisutch), bull trout (Salvelinus confluentus), coastal cutthroat (Oncorhynchus clarki clarki), chum (Oncorhynchus keta), pink (O. gorbuscha), a small population of riverine sockeye (O. nerka), and steelhead and rainbow (O. mykiss).

Federally-Listed Species

Chinook Salmon

Though Puget Sound Chinook are federally listed as Threatened, the Suiattle spring Chinook stock is classified as healthy (Washington Department of Fish and Wildlife and Western Washington Treaty Indian Tribes 2003) based on factors determined by WDFW stock assessment biologists.

One Chinook stock is specific to the Suiattle watershed, the Suiattle spring Chinook. Due to high glacial sediments, these fish use the mainstem Suiattle as transportation habitat to access the large tributaries with clear water (see Table 7). Rearing occurs in the mainstem along gravel bars, and in and around tributary confluences. Most Chinook will only rear in freshwater during their first summer then rear in the Skagit estuary, though some will rear a full year.

The Skagit Chinook Recovery Plan (Skagit River System Cooperative, 2005, Sedimentation and mass wasting section) noted that glacial melt is a factor depressing fry-to-smolt survival for Suiattle Chinook.

Steelhead

Puget Sound steelhead are listed as Threatened, the local stock in the Suiattle are part of the Sauk stock of winter steelhead. In the project area, they are suspected or known to spawn in Buck, Sulphur and Downey Creeks. This stock is considered to be depressed (Washington Department of Fish and Wildlife and Western Washington Treaty Indian Tribes 2003). The Washington Fish and Wildlife Commission enacted a moratorium on the retention of wild steelhead; all wild steelhead must be released by fishermen.

Bull Trout

The United States Department of Interior (USDI) Fish and Wildlife Service (2004) defines the Lower Skagit bull trout core area as including all of the Skagit basin downstream of Seattle City Light's Diablo Dam (and therefore includes the Suiattle River watershed). The recovery team considers the bull trout in the Lower Skagit core area, which includes 19 local populations, to have the greatest abundance of bull trout within the entire Puget Sound Management Unit (USDI Fish and Wildlife Service 2004). There are eight local subpopulations in the Suiattle watershed identified in the draft bull trout recovery plan: Tenas, Straight, Buck, Lime, Downey, Sulphur, Milk Creeks, and Upper Suiattle River.

The project area is geographically and directly related to the Buck, Downey, and Sulphur Creek local populations. The USDI Fish and Wildlife Service (2004) states that the migratory components of the Buck, Downey and Sulphur Creek local populations of bull trout are believed to be abundant and increasing by the recovery team, while the resident components are believed to be abundant and stable.

The Downey and Sulphur Creek populations are thought to contain fewer than 500 migratory adults each (Kraemer 2001).

The USDI Fish and Wildlife Service (2004) notes in the Reasons for Decline section of the draft recovery plan that the Buck and Downey Creek local populations have had localized impacts from the Buck Creek and Downey Creek campgrounds, and that the Buck, Downey and Sulphur Creek local populations have had localized impacts from the Suiattle Road, which parallels much of the Suiattle River. Inputs of sediment can increase, depending on type and maintenance of human access, and can alter hydrodynamics at stream crossings with culverts not sized to 100 year flows, which would limit wood routing from tributary streams.

Sensitive Fish

The Mt. Baker-Snoqualmie National Forest has habitat for four fish species included on the Region 6 Regional Forester's Sensitive Animal Species List (USDA Forest Service 2004a). These fish are the Puget Sound coho salmon, Baker River (Skagit) sockeye salmon, and Puget Sound coastal cutthroat trout (see Table 7).

Coho salmon: Coho spawn in the Suiattle mainstem and in several named and unnamed tributaries of the Suiattle, including Buck, Downey and Sulphur Creeks. Juveniles rear all year in available off-channel habitats.

Sockeye salmon: The riverine sockeye found in the Suiattle watershed are not part of the Baker River stock. Sockeye have been seen spawning in Buck, Downey and Sulphur Creeks, and are also suspected to spawn in lower Tenas Creek (Cutler 2001).

Coastal cutthroat: The anadromous and resident forms of coastal cutthroat are found in the mainstem Suiattle and several tributaries, but have not been noted in Sulphur and Downey Creeks.

Other Species

Pink salmon: Pink salmon in the Suiattle are part of the Skagit stock. In the project area they are found in Sulphur and Downey Creeks. This stock is considered healthy. An odd-year stock spawning in odd years, the October 2003 floods affected the stock, although recent returns have been strong.

Chum salmon: Very limited observations by WDFW biologists document chum spawning in the lower Suiattle to about RM 1.6. Considered part of the Sauk fall chum stock; it is considered healthy.

Watershed-Scale Fish Habitat Conditions

Using a Matrix of Diagnostics/Pathways and Indicators and condition levels described in USDI Fish and Wildlife Service, 1998, as a guide, Doyle (1999) assessed baseline conditions in the Suiattle River watershed for 19 habitat indicators, and one integrated fish/habitat indicator. The objective of the assessment was to integrate biological and habitat conditions to arrive at a determination of the potential effect of land management activities on a federally proposed or listed species (Chinook salmon and bull trout, in this case) at a watershed scale.

Three categories of function were described in USDI FWS 1998. *Functioning appropriately* infers that the indicators maintain strong populations and promote recovery of a listed species or its critical habitat. *Functioning at risk* infers the indicators provide for species persistence but may need active or passive restoration efforts. *Functioning at unacceptable risk* suggests the listed species is maintained at low levels and active restoration is needed for recovery.

At the time of the baseline assessment, the Suiattle River was mapped as three fifth-field hydrologic units:

Upper Suiattle: Sulphur Creek and the mainstem Suiattle and tributaries upstream of Sulphur (Site #8 in Upper);

Middle Suiattle: mainstem Suiattle and tributaries including Buck Creek upstream to, but not including Sulphur Creek (Sites #2 - 7 in Middle); and

Lower Suiattle: Suiattle mainstem from the confluence with the Sauk River upstream to, but not including, Buck Creek (Site #1 is at the upper edge of the lower Suiattle).

For the overall integration of habitat and species indicator, Doyle (1999) rated the Lower Suiattle River as *functioning at unacceptable risk*, the Middle Suiattle River as *functioning at risk*, and the Upper Suiattle River as *functioning appropriately*. These ratings were influenced by wilderness and non-federal land ownership. The Upper Suiattle is entirely within wilderness and is mostly unmanaged. The Lower Suiattle is approximately half non-federal ownership, and has been heavily managed. The Middle Suiattle is entirely within the National Forest System and is about two-thirds wilderness with most of the other area designated as Late-Successional Reserve.

Smith (2003) states that road densities and riparian conditions in the Suiattle are good, with estimates below 2 mi/mi^2 (from Lunetta et al. 1997), and with 90 to 100 percent functional riparian stream lengths (from Beamer et al. 2000). Smith noted that the Buck/Downey/Sulphur watershed unit was near or above 90 percent functional riparian stream lengths (from Beamer et al. 2000) and had greater than 70 percent conifer in riparian buffers (from Lunetta et al. 1997). While impaired riparian areas within the Suiattle are not common, some exist, scattered along the middle reaches of the mainstem (Smith 2003). Hinton (2005) noted that where road densities are high and riparian forests have been removed, such as in the Circle, Straight, Tenas, and Big Creek subwatersheds, sediment-related impacts have occurred, presumably leading to reduced spawning and rearing.

Floodplain habitat is moderately abundant along the lower Suiattle River (Smith and Waldo 2003, in Smith 2003).

Project Level Fish Habitat Conditions

The road repair associated with the proposed actions would occur in the lower, middle, and upper Suiattle watersheds. Because work would actively occur on only a small section of both the lower and upper watersheds, this report considers the Middle Suiattle watershed to typify the project analysis area for this section of the report. In 2003, watershed boundary delineations were revised throughout the State of Washington.

An "action area" is determined based on the project area and the area that could receive direct or indirect impacts associated with the project. The action area is the area of interest for consultation with the USFWS and NMFS. The action area assessed for this proposal includes Road 26, MP 0-23.2; Road 2670 through the reroute, Road 2680 MP 0.0-3.2 (pit); Green Mountain Horse Pasture (log deck storage); Suiattle River RM 24-26.3; An unnamed tributary (RM 0-0.02); Downey Creek (RM 0-0.02); and Sulphur Creek (RM 0-0.02). Roads 26 and 2680 cross other named and unnamed streams. The damaged sites were the primary focus of the assessment for the action area: Road 26 MP 6.0, (Site #1), MP 12.6 (Site #2), MP 13 (Site #3), MP13.4 (Site #4), MP 14.4 (Site #5), MP 20.8 (Site #6), Downey Creek (Site #7), and Sulphur Creek (Site #8).

The original construction of Road 26 in the valley bottom of the Suiattle River drainage disturbed streambanks at stream crossings and vegetation within riparian areas. The bridges at Downey and Sulphur Creeks were located across alluvial fans and within the valley channels, leading to constriction of flows during large hydrologic events. Road densities are considered low in the Suiattle River/Circle

Creek and Suiattle River/Milk Creek subwatersheds, with 1.67 mi/mi^2 and 0.99 mi/mi^2 of system roads, respectively.

Instream large wood is abundant in the Suiattle River drainage and in the lowest six miles of Downey Creek, which is considered a reference stream for desirable quantities of wood. Instream wood varied greatly for Suiattle River tributaries surveyed in the 1990s, and wood accumulations in jams were not enumerated, which may be the more important indicator of habitat quality in these higher gradient streams. Flooding events may have flushed wood from tributary streams, as observations post-flood events indicate wood is accumulating in the mainstem.

Flood Effects

The flooding events affected fish habitat at the project-level scale by eroding banks under Road 26 at MP 6.0, MP 12.6, MP 14.4 and MP 20.8, by eroding fill and riprap at MP 13 and MP13.4, and by eroding bridge approaches at MP 20.9 and 22.9. At Downey Creek the stream widened and recruited wood. Sulphur Creek also recruited many large trees to the stream. Downstream from Downey Creek, habitat also changed when the mainstem shifted away from the mouth of Downey, lengthening the reach of Downey Creek which continues at the toeslope of the terrace several hundred feet before merging with the Suiattle River. After the 2006 floods, the main Suiattle River flows shifted to the south side of the river channel, leaving the lower portion of Downey Creek available for Chinook salmon spawning.

Influence by National Forest Users

Campsites at Buck, Downey, and Sulphur Creeks, and the relative remoteness of the Suiattle River, make salmon migrating in these streams vulnerable to illegal harvest (USDA Forest Service 2004). Signs of poaching for Chinook salmon and bull trout have been evident in the form of gut piles and bones. In the summer, clear water from Downey Creek flows into the Suiattle floodplain without influence from the turbid waters of the Suiattle River. The additional spawning habitat created after the 2003 floods are visible and easily accessed from Road 26, and people were seen trying to catch Chinook in 2004 (Barkdull, personal communication). Fishing for bull trout is allowed, with both geographic and catch-size restrictions. It is possible that illegal harvest of steelhead and coho occur when they are present. Besides effects to adults, eggs, and pre-emergent fry in the gravels can be damaged or killed by recreationists walking in the streams or altering the streambed where redds may have been dug.

Critical Habitat

Critical habitat is a term used within the ESA. It is defined as an area occupied by a species listed as threatened or endangered within which are found physical or geographical features essential to the conservation of the species, or an area not currently occupied by the species, which is itself essential to the conservation of the species. As defined in the ESA, "conservation" means any and all methods and procedures, and the use of those, needed to bring a species to recovery—the point at which the protections of the ESA are no longer needed.

On September 2, 2005, the NMFS issued a final rule designating critical habitat for 12 Evolutionarily Significant Units (ESUs), including the Puget Sound Chinook salmon ESU (70 FR 52630). This rule became effective January 2, 2006. The Suiattle Road 26 Repair project lies within the Sauk Subbasin portion of this ESU, and includes the following critical habitat water body segments: the Suiattle River up to Milk Creek, up Downey Creek two miles, and up Sulphur Creek 1.2 miles. All the above areas provide spawning, rearing, or migration habitat, and were rated as having high conservation value to the ESU. These segments support the independent population of the Suiattle River (spring) Chinook.

The USFWS issued a final rule September 30, 2010, designating critical habitat for Coastal-Puget Sound bull trout (75 FR 63898). This listing includes all stream segments in the Suiattle River, Downey Creek, and Sulphur Creek within the action area.

Essential Fish Habitat

The Sustainable Fisheries Act of 1996 amended the Magnuson-Stevens Fishery Conservation and Management Act to require federal agencies to consult with NMFS for activities that could adversely affect "essential fish habitat" for fish species managed by the Pacific Fishery Management Council (PFMC). Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Chinook, coho, and pink salmon are the predominant species caught and managed under the PFMC's salmon management plan. Relative to this project, essential fish habitats for Chinook, coho, and pink salmon are present in the Suiattle River mainstem, Downey and Sulphur Creeks.

Watershed and Fish Habitat Restoration

The Aquatic Conservation Strategy described in Northwest Forest Plan (USDA Forest Service 1994) refocused the Mt. Baker-Snoqualmie National Forest watershed restoration program starting in fiscal year 1995. The goals and objectives of watershed restoration are integral to recovery of fish habitat, riparian habitat, and water quality. Restoration activities are designed to protect and restore upslope, riparian, and channel components of watersheds, including physical, chemical, and biological characteristics. Treatments are applied to accelerate natural recovery. Table 8 displays many restoration treatments that have been implemented in the Suiattle River system since the mid-1980s. The list is not exhaustive and shows a variety of treatments and locations.

Table 8: Selected Watershed Restoration History

Location	Date	Description
Suiattle Tributaries (Boundary, Flat Alder, Marsh, Pedestal, Lime, Cutoff)	1985 - 1997	Off-channel rearing-pond or pool habitat enhancement
Suiattle Tributaries (Tenas, All, Conrad, Straight, Marsh, Buck, Circle, Lime, Clear Beaver, Danny Boy, Sulphur, others)	1983 - 1997	In channel structures for spawning and rearing habitat
Rd. 26 (Captain, unnamed), Seed Orchard, Straight, Tenas	1996 - 2002	Restore fish passage at road crossings; improve instream passage
Rd 25, 2550, 2510-012	1990 - 2000	Road treatments, include decommissioning
Road 25	2008	Extension of Boundary Bridge - increased channel migration zone
Rd 26	2000 - 2011	Upgrade of culverts in first 12 miles
Roads 2640 and 2660	2009 - 2010	Roads were stored, culverts removed.

Opportunities still exist for additional restoration treatments in the Suiattle River system. Restoration activities would benefit salmonid fish and their habitats by reducing human-influenced sedimentation above an already high natural loading, and by increasing or enhancing spawning and rearing habitat quantity or quality. Activities might include additional treatments of upslope drainage problems associated with roads through either closure or decommissioning, or through reconstruction of roads to improve local hydrology.

Fisheries Environmental Consequences

3.7.1 Alternative A (No Action)

With this alternative, the road repairs would not be implemented; there would be no realignments or reroutes, no culverts would be upgraded, and no trees would be cut. There would be no ground disturbance or construction traffic. The temporary road at Site #1 would be left open until such time as a new easement with the State of Washington could be obtained, or the Suiattle River undercuts the toe of the bank and the temporary road fails. The end of Road 26 for public use would continue to be located at about MP 12.6 (Site #2). The temporary road to the bridge over Downey Creek would be retained for administrative use. There would be no repairs at Downey or Sulphur Creek Bridges, and no culvert or fill removal in the Downey Creek floodplain.

Federally Listed Fish

With Alternative A, there would be no direct effects to federally listed fish and existing population trends of Chinook salmon, steelhead and bull trout would not change (Suiattle populations are stable or increasing). Large flows could reach temporary roads at Site #1 to Site #5. In this situation, some redds that were not scoured and washed away by the high flows could be smothered or partially buried by the road fills, with additional material entering the Suiattle should the road be overtopped.

The effect of sediments specifically from the flood-damaged sites, to federally listed fish, would not be significant to their populations due to dilution from other flood effects throughout the watershed. Indirect effects to fish in the form of additional sedimentation in the Suiattle River would be insignificant due to the high background load in the Suiattle River.

Under normal flows, surface erosion would continue to add sediments to Downey and Sulphur Creeks, and the Suiattle River from the damaged road fills, as well as from lack of maintenance along the less accessible roads. With gradual inputs of fine sediments mixed with the high background levels, there would be no detectable or measurable change in the quantity or quality of fish habitat or to fish behavior.

An indirect effect associated with reduced vehicular access is to make poaching more difficult at Sulphur Creek due to the walking distance to remove the fish. At Downey Creek, particularly with the additional habitat created downstream from the bridge, poaching would continue, and enforcement would be more difficult due to lack of access.

Existing trends in Chinook salmon, steelhead and bull trout populations would not change, and there would be no direct effects to federally listed fish. Indirect effects could occur to redds or rearing juveniles due to road-related sedimentation mentioned above, but may not be measurable or traceable to lack of project action.

Sensitive and Other Fish Species of Interest

The impact determinations for coho, sockeye and coastal cutthroat are *May Impact Individuals*, but *Not Likely to Trend toward Listing*. Indirect effects of sedimentation would not reach chum salmon habitat (habitat used is downstream of the potential effect of sediments). There would be no direct effects to Regional sensitive fish species, or to other fish species of interest.

Large floods would add sediments from the river terraces and road fill to areas occupied by coho, sockeye, coastal cutthroat, and pink salmon for spawning or rearing, potentially smothering or partially burying redds and filling rearing pools. The effect of sediments specifically from the eight flood-

damaged sites, to sensitive or other fish species of interest, would not be significant to their populations due to dilution from other flood effects throughout the watershed.

At normal flows, gradual inputs of fine sediments from surface erosion at damaged fills and unmaintained roads would mix with high background levels, and would not be detectable or create a measurable change in the quantity or quality of fish habitat or to their behavior.

With the adaptation of fish to high background sediment loads in this watershed, consequences of selecting this alternative would not cause the regionally sensitive fish to trend toward federal listing. Poaching of coho is not known to occur with such frequency to lead this species to federal listing.

Fish Habitats

Implementing this alternative would have no direct effects to fish habitat at either the watershed or project-level scales. There would be no potential for direct sedimentation or potential inputs of oil and other chemicals from vehicles to contaminate water quality because there would be no use of equipment near water or along the banks.

Road fill in the channel at bridge sites (Downey and Sulphur Creeks) would remain in the channel and sedimentation during floods from erosion of damaged fills and from fill-failures at the undersized crossings at Sites #7 and #8 would cause sediment deposition in the mouths of Downey and Sulphur Creeks, degrading adjacent spawning and rearing habitats.

Critical Habitat:

Large floods would add road fill and fine sediments to designated critical habitats used for spawning, rearing and migration. The effect of sediments specifically from the eight flood-damaged sites, to sensitive or other fish species of interest, would not be significant. At normal flows, gradual inputs of fine sediments from surface erosion at damaged fills and unmaintained roads would mix with high background levels, and would not be detectable or create a measurable change in the primary constituent elements of designated critical habitats.

Essential Fish Habitat:

Large floods would add road fill and fine sediments to designated critical habitats used for spawning, rearing and migration. The effect of sediments specifically from the eight flood-damaged sites, to essential fish habitats, would not be significant. At normal flows, gradual inputs of fine sediments from surface erosion at damaged fills and unmaintained roads would mix with high background levels, and would not be detectable or create a measurable change in the essential habitats for Chinook, coho, or pink salmon.

3.7.2 Alternative B

Activities associated with Alternative B that would restore access on Road 26 to the terminus would have ground disturbing impacts with the realignment of the road, with culvert upgrades and removal in the section of road to be abandoned and rehabilitated. There would also be temporary impacts from ground disturbing activities associated with the culvert removal at MP 20.9 and bridge extensions to the Downey Creek Bridge. The road repair at MP 20.8 and a concrete faced retaining wall in the approach to the Sulphur Creek Bridge would be adjacent to flowing water bodies, but would be outside of the ordinary high water mark

Federally Listed Fish

Activities associated with Alternative B would maintain the trends in Chinook, steelhead and bull trout populations at the scale of the Sauk sub-basin and Suiattle River watershed. Project activities would not measurably improve or degrade fish populations at these scales due to the limited extent of effects. The effect determinations for Chinook salmon, steelhead and bull trout are *May Affect, Not Likely to Adversely Affect*.

At the project scale, there would be no direct effects from activities at Site #1 to Site #5 because activities would be on a terrace of the Suiattle, up slope and out of the floodplain. The tributary streams, where crossed at the proposed repair sites (#1 to #5), do not support anadromous fish (WDFW 2011).

The work at MP 20.8 (Site #6) would reconstruct the road for about 250 feet by moving into the hillside. All work would be outside of the ordinary high water mark for Downey Creek and the Suiattle River so as to not disturb fish use of this stream reach created with the shift of the Suiattle River to the south side of the channel.

Downey Creek (Site #7) would extend the length of the Downey Creek Bridge about 210 feet with additions of three spans to the west end of the bridge. The bridge extension would be within the road prism, but outside of the bankfull channel of Downey Creek. The bridge extension would allow for the removal of road fill in the approach to Downey Creek Bridge and the removal of an existing 48" culvert. The culvert that would be removed at Site #7 does not have fish present at the site, but becomes a distributary channel on the alluvial fan. The additional 210 feet and fill removal in the Downey Creek floodplain would allow natural channel processes across the width of the floodplain. All new spans to the Downey Creek Bridge would be supported on piers founded on piles or spread footings that are deep enough to be safe from scour. This work would be outside of the current Ordinary High Water (OHW). Work at the existing pier of the bridge would include protective work with a proposed apron of ballistic nylon bags filled with high strength grout. This work would be near the OHW, within 5 feet of the existing footing, at or below the top of the current pier footing so it would not appreciably influence or construct flow. The work as designed would not appreciably change fish habitat in the pier work area, but would provide benefit to fish habitat with the removal of fill on the backside of the pier to reduce the channel constriction.

The work at Sulphur Creek would extend the width under the bridge by approximately 15 feet to better accommodate the bankfull width. A concrete faced retaining wall would be keyed into the bank, and existing on-site material would be used for the retaining wall backfill. Up to 100 cubic yards of riprap would be installed to protect the concrete wing walls with all work outside of the bankfull width.

Alternative B would not replace fill and riprap within the bankfull channels at Downey and Sulphur Creeks thereby allowing normal flows to pass. The risk of road fill entering these streams during large flood events would be reduced and spawning and rearing habitats downstream would not be directly or indirectly degraded. Sedimentation would be short-term and not exceed transport capacity or natural variability of Downey or Sulphur Creeks or the Suiattle River. Increased channel width under the bridges allows for more natural channel processes within Chinook salmon, steelhead and bull trout habitat.

Project activities fall within the scope of the NMFS Biological Opinion (December 15, 2003) and Letter of Concurrence (December 29, 2003), and the USFWS Programmatic Letter of Concurrence (June 17, 2004) with Level I discussion and signatures. Consultation with NMFS and USFWS was completed for Alternative B with Project Consistency Evaluation on August 26, 2004 (MP14.4 and the bridges), in August 2009 for the Lower Suiattle Sites (MP 6.0 to MP 13.4), and in March and April 2011 for MP 20.8

and for MP 20.9 and MP 22.9 (Downey Creek and Sulphur Creek Bridges repairs) with the redesign of the repair at MP 20.9 for the 210 foot bridge extension at Downey Creek.

Indirect effects of Alternative B would be protection of fish habitat with the shift of Road 26 alignment (Site #1 to Site #5) away from the Suiattle River. This would reduce sediment delivery from roads adjacent of the river, reconnect streams within the alluvial fans of stream tributaries with the Suiattle floodplain, remove culverts in the floodplain and allow for more natural channel processes within the areas where the Road 26 is realigned.

Sensitive and Other Fish Species of Interest

The impact determinations for coho, sockeye, and coastal cutthroat are *May Impact Individuals*, but *Not Likely to Trend Toward Listing*. Indirect effects of sedimentation would not reach chum salmon habitat (habitat used is beyond potential effect of sediments).

At the watershed scale, implementing Alternative B would not result in noticeable or measurable impacts to sensitive or other fish populations of interest.

At the project scale, there would be no direct effects from activities at Site #1 to Site #5 because activities would be on a terrace of the Suiattle, up slope and out of the floodplain. The tributary streams, where crossed at the proposed repair sites (#1 to #5), are not fish-bearing.

The work at MP 20.8 (Site #6) would reconstruct the road for about 250 feet by moving into the hillside. All work would be outside of the ordinary high water mark for Downey Creek and the Suiattle River so as to not disturb fish use of this stream reach created with the shift of the Suiattle River to the south side of the channel.

As stated above, the Downey Creek (Site #7) would extend the length of the Downey Creek Bridge about 210 feet with additions of three spans to the west end of the bridge. The bridge extension would be within the road prism, but outside of the bankfull channel of Downey Creek. The bridge extension would allow for the removal of road fill in the approach to Downey Creek Bridge and the removal of an existing 48" culvert. The culvert that would be removed at Site #7 does not have fish present at the site, but becomes a distributary channel on the alluvial fan. The additional 210 feet and fill removal in the Downey Creek floodplain would allow natural channel processes across the width of the floodplain. All new spans to the Downey Creek Bridge would be supported on piers founded on piles or spread footings that are deep enough to be safe from scour. This work would be outside of the current OHW. Work at the existing pier of the bridge would include protective work with a proposed apron of ballistic nylon bags filled with high strength grout. This work would be near the OHW, within 5 feet of the existing footing, at or below the top of the current pier footing so it would not appreciably influence or construct flow. The work as designed would not appreciably change fish habitat in the pier work area, but would provide benefit to fish habitat with the removal of fill on the backside of the pier to reduce the channel constriction.

The work at Sulphur Creek would extend the width under the bridge by approximately 15 feet to better accommodate the bankfull width. Excavation to remove existing fill would not occur within the current wetted channel. A concrete faced retaining wall would be keyed into the bank, and existing on-site material would be used for the retaining wall backfill. Up to 100 cubic yards of riprap would be installed to protect the concrete wing walls with all work outside of the bankfull width. Alternative B would not replace fill and riprap within the bankfull channels at Downey and Sulphur Creeks which would allow normal flows to pass. The risk of road fill entering these streams during large flood events would be

reduced and spawning and rearing habitats downstream would not be directly or indirectly degraded. Sedimentation would be short-term and not exceed transport capacity or natural variability of Downey or Sulphur Creeks or the Suiattle River. This action would mimic pre-flood conditions by increasing the channel width under the bridges, allowing for more natural channel processes within habitat for Skagit River fish stock.

Fish Habitat

At the scale of the Suiattle River watershed, activities associated with Alternative B would maintain all habitat indicators. There would be no measurable direct or indirect effects to fish habitat at the watershed scale.

Project level activities associated with Alternative B would cause short term impacts from ground disturbance resulting in potential additional sediment to the Suiattle River. Long-term, Alternative B would provide enhancement of fish habitat with the shift of Road 26 alignment (Site #1 to Site #5) away from the Suiattle River by: reducing sediment delivery from road 26 in its existing location adjacent o the river, reconnecting streams within the alluvial fans of stream tributaries with the Suiattle floodplain, removing culverts in the floodplain and allowing for natural channel processes within the areas where the Road 26 is realigned and the road rehabilitated.

The following habitat features are discussed in more detail below: sedimentation to spawning and rearing habitats, large woody debris, and channel morphology/floodplain connectivity.

Sedimentation to spawning and rearing habitats generated by Alternative B may add sediment to all sites in the action area, but would be short-term and localized, not exceeding the transport capacity or the variability of Downey or Sulphur Creeks or tributary streams of the Suiattle River. Conservation measures and timing of activities would minimize sedimentation into the stream at Sites #1 to Site #5, at Downey and Sulphur Creeks, and to the overflow near Downey Creek. The culvert replacements at Site #1 to Site #5 would be over 200 feet from the Suiattle in non-fish-bearing stream reaches. The Suiattle River carries a very high natural sediment load and additional sediment reaching the Suiattle would not be measurable or observable due to dilution and with the use of Best Management Practices (BMPs).

As stated above, the Downey Creek (Site #7) would extend the length of the Downey Creek Bridge about 210 feet with additions of three spans to the west end of the bridge. The bridge extension would be within the road prism, but outside of the bankfull channel of Downey Creek. The bridge extension would allow for the removal of road fill in the approach to Downey Creek Bridge and the removal of an existing 48" culvert. The culvert that would be removed at Site #7 does not have fish present at the site, but becomes a distributary channel on the alluvial fan. The additional 210 feet and fill removal in the Downey Creek floodplain would allow natural channel processes across the width of the floodplain. All new spans to the Downey Creek Bridge would be supported on piers founded on piles or spread footings that are deep enough to be safe from scour. This work would be outside of the current OHW. Work at the existing pier of the bridge would include protective work with a proposed apron of ballistic nylon bags filled with high strength grout. This work would be near the OHW, within 5 feet of the existing footing, at or below the top of the current pier footing so it would not appreciably influence or construct flow. The work as designed would not appreciably change fish habitat in the pier work area, but would provide benefit to fish habitat with the removal of fill on the backside of the pier to reduce the channel constriction.

Spawning and rearing habitats would not be measurably degraded, and the risk of future inputs of road-related sediments would be reduced, incrementally improving the quality of downstream habitats.

Channel morphology and floodplain connectivity associated with Alternative B would be improved. At Site #1, the reroute would move Road 26 out of the channel migration zone of the Suiattle River. At Site #2, the Suiattle Road would be moved upslope and away from the migrating channel and toeslope erosion of the bank of the Suiattle River. At Site #3 and #4, Road 26 would be rerouted for approximately one mile around two washout sites using Forest Service Road 2670 which would include new construction on a terrace above the floodplain. The rehabilitation of the abandoned section of Road 26 would reconnect the alluvial fans of stream tributaries with the Suiattle River floodplain. The repair at Site #5 would also shift the road away from the migrating channel and toeslope erosion of the bank of the Suiattle River. Activities at Site #1 to Site #5 would improve natural channel morphology by removing the culverts in the floodplain, and sizing upslope culverts to accommodate 100-year flood flows and promote floodplain connectivity.

Flooding events increased the width-to-depth ratio at Downey and Sulphur Creeks (most of both drainages are located in wilderness). Alternative B proposed repairs at Downey and Sulphur Creeks would restore a more natural width-to-depth ratio at the bridges by allowing for bankfull flows to more fully occupy the floodplain channel. Increasing the width under the bridges for flows would improve floodplain connectivity of the lower reaches of Downey and Sulphur Creeks.

Large woody debris loading and routing at Downey and Sulphur Creeks would be improved, as the effective area for passage under the bridges would be increased. Some, but not all of the large, fallen trees upstream would likely pass under bridge structure, if they become mobile. A log jam above the Downey Creek Bridge is an example of the size material mobilized by a stream the size of Downey Creek. This wood and the existing debris against the Sulphur Creek Bridge pier that would be re-located downstream provide instream benefits (rearing and holding pool formation, spawning gravel retention). Some trees removed at Site #5 would be left on-site as down wood material, while others would be stockpiled for administrative use such as instream restoration. Trees adjacent to well-traveled roads such as Road 26 have a low likelihood of natural routing to streams, as they are often cut into pieces to gain access, which decreases its potential for instream value as a pool-forming agent and reduces its ability to influence flows and trap spawning gravels.

Critical Habitat: Activities associated with Alternative B were assessed for Chinook salmon and bull trout critical habitat as part of the fisheries Biological Assessments. The effect determination for activities associated with Alternative B is May Affect, Not Likely to Adversely Affect designated Chinook salmon and bull trout critical habitat because while activities would add sediments, they would not significantly degrade spawning, rearing, or migration habitats.

Essential Fish Habitat: Activities associated with Alternative B were included as part of the fisheries Biological Assessment. Project activities fall within the scope of the NMFS Biological Opinion for essential fish habitats and the effect determination is Not Likely to Adversely Affect essential fish habitats for Chinook, coho, and pink salmon. While activities would add sediments, there would be no significant degradation to essential habitats for these species (see Chapter 4 for Consultation history).

3.7.3 Alternative C

Activities associated with Alternative C would be the same as Alternative B for Sites # 1 through Site #5, with the restoration of access on Road 26 to the junction of Road 26 with Road 2680. The ground

disturbing impacts with the realignment of the road, with culvert upgrades and removal in the section of road to be abandoned and rehabilitated are described in Alternative B.

With Alternative C there would be no additional repairs to last 4 miles of Road 26, and no administrative access to the Downey Creek Bridge so there would be no maintenance of Road 26 from the junction of Road 26 and 2680 and the road terminus. The environmental consequences of Alternative C for Sites # 6 to #8, MP 20.8 to MP 22.9 would be as described in Alternative A, No Action.

Effects of Mitigations

Mitigations are listed in Chapter 2. They include measures to help prevent spread of noxious weeds, to maintain water quality, and to minimize or avoid impacts to botanical, wildlife and fish species of concern from direct or indirect activities associated with the action alternatives.

The botany mitigations would mostly have a neutral effect on fish, though seeding and mulching abandoned road segments would help prevent sedimentation.

Wildlife mitigations include timing restrictions for Site #5. Project activities occurring during low flows and non-spawning periods would have the least potential to affect fish or their habitats. Combined with mitigations to address sedimentation, the wildlife timing restrictions should be neutral (starting in July) or beneficial (stopping by the end of October) to fish at Site #5. The mitigations to address hydrologic function, sedimentation, water quality, and riparian conditions would have indirect benefits to fish through avoidance or minimization of impacts to fish habitat with work at all sites (#1 to #8). Most of these mitigations are conservation measures that the USFWS and NMFS Fisheries have incorporated into consultation documents with the MBS National Forest to avoid or minimize incidental take of listed fish and to address effects to essential fish habitats.

Some mitigations are also included as provisions of hydraulic project approval with the Washington Department of Fish and Wildlife. These are standard provisions refined over many years of permitting hydraulic projects in waters of the state and have been accepted as ways to prevent or minimize effects from activities that disturb the bed or banks of streams.

Fisheries Cumulative Effects

The effects of implementing either one of the action alternatives could overlap with lingering effects from past projects, from incremental effects of concurrent projects, or from estimated additive effects of projects being planned for the near future. Table 9 displays activities that are being considered in this cumulative effects assessment for fisheries and aquatic habitats. There are no resulting substantial cumulative effects to fish or their habitats expected by implementing either action alternative.

The cumulative effects section for Geology/Soils/Hydrology/Water Quality (see Water Quality Alternatives B and C and Cumulative Effects) provides a more detailed assessment of the potential influences from these projects. Sedimentation would be the predominant effect caused by management activities, with which this project could cumulatively overlap. Suspended sediments and bedload (coarse sediments such as sand and gravels) are of particular concern for fisheries due to negative effects on spawning and rearing habitats. These materials can smother redds and fill pool habitats, reducing fish survival and growth.

Effects from the proposed Suiattle Road 26 Repairs project would not overlap with suspended sediments and/or bedload from the Boundary Bridge Repair, Suiattle Trail Repairs, Suiattle River Bridge on the Milk Creek Trail due to lack of overlap in time. The effects of road maintenance, and private land timber harvest would have not have measurable impacts based on best management practices associated with

those activities. Other cumulative effects (benefits to fisheries) result from fish passage and instream projects, as well as the lingering effects (detrimental to fisheries) of riparian and instream wood removal from past harvest and stream cleanout.

The sediment effects from the proposed project activities would not be measurable due to dilution and masking by the high background sediments, and mitigation measures would further minimize effects. Overall benefits to fish populations would be incrementally cumulative, but not measurably attributable to the proposed project. Tree removal at Site #1 and increased capacity for stream channel debris passage at all sites would have incremental effects to wood loading and routing, but would not result in significant cumulative effects. There would be no resulting significant cumulative effects to fish or their habitats by implementing either action alternative. See Water Quality Alternatives B and C and Cumulative Effects for detailed discussion and rationale.

Table 9: Activities for Fish Cumulative Effects Analysis

Project or Activity and Extent/Description	Potential Influence	Overlap		Comments/Resulting Cumulative Effect of Proposed Action with Project or Activity Listed?
		Time	Space	
Boundary Bridge Repair Extend bridge to better span floodplain	Woody debris and flow routing, suspended sediment/bedload to fish-bearing waters.	No	Yes	Constructed in 2009. Potential cumulative effect do not overlap in time. Resulting improved wood routing and passage of flows under Rd. 25 would be incrementally cumulative. No measurable/significant effect of sediments to fish or habitats.
Suiattle Trail Repairs Trail relocation along between Mp 1.5 and Mp 3.0	Suspended sediment delivery to fish-bearing waters, concussive vibrations	No	Yes	Completed in 2006. Additional work between MP 3 and MP 7 in 2010 and 201. Potential cumulative effect do not overlap in time, and would have no measurable/significant effect of sediments to fish or habitats, and therefore not cumulative. No concussive activities are proposed.
Suiattle River Trail Bridge Replace trail bridge across Suiattle River at beginning of Milk Creek Trail 790	Woody debris routing, suspended sediment delivery to fish-bearing waters	No	Yes	Contract awarded in 2006. Project cancelled in 2007 due to flood damage at the proposed bridge site Potential cumulative effect do not overlap in time. Improved routing of debris likely incrementally cumulative, but would not be attributable to the project in a measurable way. Effect of sediments to fish and habitats would not be measurable/significant, and therefore not cumulative.
PCT Flood Repairs: **Relocate PCT between Vista Creek and Miners Creek. 3.25 miles of new trail and new bridge over Suiattle River.**	Woody debris routing, suspended sediment delivery to fish-bearing waters	No	Yes	Project completed in 2011. Potential cumulative effect do not overlap in time, and would have no measurable/significant effect of sediments to fish or habitats, and therefore not cumulative. No concussive activities are proposed.
Road 25 Closure/Storage 2.5 miles of waterbars and culvert removals on Rd. 25; several miles decommission/closure treatments on Rd. 2550; bridge removal 2510-012	Suspended sediment delivery to fish-bearing waters	No	Yes	Rd. 25 completed in 2002; other work in 1990s. No potential cumulative effect due to lack of overlap in time no lingering sediment effects).

Project or Activity and Extent/Description	Potential Influence	Overlap		Comments/Resulting Cumulative Effect of Proposed Action with Project or Activity Listed?
		Time	Space	
Fish Passage Culvert Replacements Fish passage improvement at Captain Creek and unnamed stream at Rd. 26; Seed Orchard Creek	Improved access for spawning/rearing, increased fish population size	No-access Yes-fish	No-access Yes-fish	Completed 1998 (Captain, unnamed) and 1996 (Seed Orchard). While these past projects may have lingering benefits to local fish populations, proposed project would not measurably influence fish access. Overall benefits to fish populations would be incrementally cumulative, but not likely measurably attributable to proposed project.
Instream treatments Structures and off-channel projects for spawning and rearing habitats in multiple streams, including Sulphur Creek	Instream habitat diversity and overwinter rearing habitat resulting in increased fish population size; suspended sediments/bedload	Yes-fish No-sed Yes-habitat	Yes-fish No-sed, habitat	Completed 1983-1997. Increased diversity; increased quantity and quality for rearing and spawning, though many sites have since experienced flood damage. While these past projects may have lingering benefits to local fish populations, overall benefits by proposed project to fish populations would be incrementally cumulative, but not likely measurable. No potential cumulative effect to habitats due to lack of lingering effects in project area, and suspended sediments and bedload have transported away or settled.
Road Repairs Multiple fixes from floods in 1974, 79, 80, 89, 90, 96. Replace fill and riprap, clear and replace with larger culverts along Roads 25, 26, other roads	Hydrologic routing, suspended sediment delivery to fish-bearing waters	No	Yes	Sedimentation from past flood events; local drainage improved where culverts cleaned and upgraded. No potential cumulative effect due to lack of overlap in time (no lingering effects).
Road Maintenance and Repairs Routine road maintenance on Road 26 is brush every 3 years and grade/blade 2 times yearly. ARRA road upgrade projects MP 0.0 to 10.0 on Road 26, Road 25 and Road 27 maintenance.	Hydrologic routing, suspended sediment delivery to fish-bearing waters	Yes	Yes	Planned for 2006 to 2012; conservation measures would minimize sedimentation (short-term) and improve local hydrology. Potential cumulative effect due to overlap in both time and space, but no measurable/significant effect to hydrology or of sediments to habitats, and therefore not cumulative.
Forest Service Timber Harvest 7810 acres total in WA – 2450 acres 1980 to 1995, 5360 acres 1930 to 1979 mostly by clearcut	Hydrologic routing, suspended sediment delivery to fish-bearing waters, riparian conditions, instream wood	Yes	Yes	Riparian stands are recovering, though some lingering effects of instream and riparian wood removal. Potential cumulative effect due to overlap in both time and space. Proposed project would not result in measurable/significant effects to hydrology or fish/habitat conditions, and therefore no cumulative effects.
Non-Federal Land 12,979 acres (Watershed Analysis)	Hydrologic routing, suspended sediment delivery to fish-bearing waters, riparian cond. and instream wood	Yes	Yes-sed	Harvesting 2004-2009. 416 acres (15 acres harvested in 2001). No instream wood removal; hydrology maintained with canopy retention and buffers. Potential cumulative effect due to overlap in both time and space, but no measurable/significant effects expected to hydrology or fish/habitat conditions, and therefore not cumulative.

Forest Plan Consistency

Both Action alternatives are consistent with the MBS Forest Plan and the Northwest Forest Plan. The action alternatives meet the standards and guidelines found in the forest plan and the Aquatic Conservation Strategy.

Aquatic Conservation Strategy Objectives

To be consistent with the 1994 Northwest Forest Plan, projects must be consistent with the Aquatic Conservation Strategy (ACS) Objectives. A finding must be reached that a project "meets" or "does not prevent attainment" of the ACS objectives. The project as proposed would not prevent or retard, the achievement of the Aquatic Conservation Strategy Objectives at the scale the ACS Objectives were described. For additional descriptions of how the proposed action would meet ACS objectives, see the discussion of environmental effects for Alternatives B and C in the Geology, Soils, Hydrology and Water Quality section in Chapter 3.

Objective 1: *Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.*

- This project would contribute to maintaining diversity and complexity of watershed features by shifting roads out of the flood plain so there would be free flow of the Suiattle River. Sections of damaged roads would be rerouted farther away from the Suiattle River to locate the road outside of the channel migration zone.

Objective 2: *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

- This project would maintain and restore hydrologic connectivity within the watershed. Sections of damaged roads would be rerouted farther away from the Suiattle River outside of the channel migration zone. Additionally, the obliteration of some road sections located in or near riparian areas would restore hydrologic connectivity between adjacent flood plains and upslope areas. This would also provide for reconnection of wetland areas.

Objective 3: *Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.*

- This project would maintain and restore the physical integrity of aquatic banks and shorelines through relocating sections of damaged farther away from the Suiattle River and outside of the channel migration zone. Removal of riprap at Milepost 13.0 would contribute to the restoration of the shoreline configuration of the Suiattle River.

Objective 4: *Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

- This project will not affect the water quality of the Suiattle River that is primarily influenced by the melt from the ice fields on Glacier Peak. The project will maintain water quality in tributary streams and wetlands by rerouting and restoring damaged road segments in the vicinity of aquatic resources.

Objective 5: *Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*

- This project will not affect the sediment regime in the Suiattle River that is greatly influenced by the melt from the ice fields on Glacier Peak. Two sections of road will be rerouted away from the river and damaged road sections near the River will be decommissioned. Road rerouting, culvert upgrades and other road repairs will reduce the chance of large scale road failure due to flood flows and will reduce the amount of sediment generated from road use that reaches the river.

Objective 6: *Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

- This project will not affect the natural instream flows. The proposed repairs would reduce the potential for floodwaters to overtop road surfaces, erode road prisms and slopes. This would reduce the volume of sediment delivered to streams. The repairs at the Downey Creek and Sulphur Creek Bridges would allow a larger opening for routing of wood in the stream systems..

Objective 7: *Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.*

- This project will maintain and restore the timing, variability and duration of stream bank inundation by restoring hydrologic connectivity in riparian areas between the MP 12.6 and MP 14.4 reroute. Rerouting the road up the slope and decommissioning the damaged road near the river will remove hardened surfaces and riprap, allowing the river more natural access to the floodplain. Removal of riprap at Milepost 13.0 would also contribute to the restoration of the floodplain inundation as would the fill removal in the Downey Creek floodplain at MP 20.9.

Objective 8: *Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.*

- This project would maintain and restore the composition and diversity of plant communities in riparian areas by rerouting sections of the road out of riparian areas. Abandoned sections of roads would have vegetation restored. Streambanks would be revegetated during road obliteration activities to ensure physical stability of restored stream crossings and to reestablish a native plant community on disturbed ground.

Objective 9: *Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

- This project would maintain and restore the composition and diversity of plant communities in riparian areas by decompacting and revegetating riparian areas of road reroutes. Planting of native species, seeding and mulching would follow road obliteration activities to ensure establishment of a native plant community on disturbed ground. Revegetation will occur after construction is complete.

Recognizing that there are small, short-term impacts needed for long-term benefits, impacts to the at-risk fish species and their habitat discussed above are authorized under:

The Biological Opinion and Letter of Concurrence USDA Forest Service, USDI Bureau of Land Management, and Coquille Indian Tribe for Programmatic Aquatic Habitat Restoration Activities in

Oregon and Washington that Affect ESA-listed Fish, Wildlife, and Plant Species and their Critical Habitat (US Fish and Wildlife Service 2007)

Endangered Species Act – Section 7 Programmatic Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation, Fish Habitat Restoration Activities in Oregon and Washington, CY 2007-2012 (National Marine Fisheries Service 2008)

Memorandum of Understanding Between Washington Department of Fish and Wildlife and USDA Forest Service, Pacific Northwest Region Regarding Hydraulic Projects Conducted by USDA Forest Service, Pacific Northwest Region, January 2005.

3.8 Geology, Soils, Hydrology, Water Quality

Introduction

Three main aquatic systems are part of the Suiattle Road project area: the Suiattle River that flows generally westerly into the Sauk River, and Downey and Sulphur Creeks that both flow into the Suiattle River. The Suiattle River originates on the slopes of the Glacier Peak and several other 7,000 to over 8,000 foot peaks that form the watershed divide between the White Chuck, Sauk and Cascade Rivers. The peaks contain permanent snowfields and glaciers that help maintain summer flows, and exert an even greater influence than large glaciers do in the White Chuck River. The Suiattle River and Thunder Creek, in North Cascades National Park, drain more glaciers than any other river basins in the Cascades. Erosion of volcanic sediments and glacier melt water carries fine silts that keep the Suiattle River cloudy (turbid) much of the year, especially during the summer when melt rates are greatest. The Suiattle River watershed encompasses approximately 346 mi^2 of land with 94 percent occupying National Forest System lands.

Downey and Sulphur Creeks originate at similar elevations and flow into the Suiattle River from a north to northeasterly direction. Downey and Sulphur Creeks do not have the influence of large glaciers. As a result, they produce clearer flows during summer months. Downey and Sulphur Creek sub-watershed areas are 36 mi^2 and 33 mi^2, respectively.

The Suiattle River valley forms a sweeping crescent around the east and north side of Glacier Peak. Most of the valley is a modified glacial "U" shape. Much of the upper valley is buried in hundreds of feet of fluvial debris from Glacier Peak. The river channel itself is up to 500 feet wide between Chocolate Creek to just downstream of Canyon Creek where the valley narrows in width from 100 to 600 feet. Below Sulphur Creek, the valley bottom widens, ranging from 200 to over a 1,000 feet in width. Both Downey and Sulphur Creek drainages are hanging glacial valleys to the Suiattle. They are U shaped with flat valley floors about 1,000 above the level of the Suiattle River. Slopes in the project area range in steepness from 40 to 60 percent and are largely composed of dissected benches and rock out-crops. Average annual precipitation varies from approximately 110 inches in the lower valley in proximity to the project sites to 150 inches per year at the higher elevations such as the upper ridges in Downey and Sulphur Creeks.

Snow and debris avalanche chutes are a common feature at mid- to higher-elevations in the Suiattle River watershed. These features collect sizable amounts of loose material and when they scour, during storm events, this material travels rapidly down-slope into streams and rivers. Roads that closely parallel and cross active channels below these chutes are directly or indirectly affected by this debris. Debris can

reach a road-crossing site directly and collect at or washout roads as occurred at the Downey and Sulphur Creek bridges. Indirectly, the debris flow can disrupt and redirect the flow of the water in the drainage and cause washouts.

Geology and Soils

Bedrock in the project area is derived from two major units divided by the Straight Creek Fault which passes through the project area near the MP 12.4 repair site. Rocks are largely Chiwaukum Schist, and some Nason Ridge gneiss, east of the fault. West of the fault lower grade schist and phyllite are found. Volcanic andesite and dacite from Glacier Peak are found as lahar, fluvial and glacial deposits throughout the project area. Bedrock is exposed at points along Downey and Sulphur Creeks and less frequently along the Suiattle River below Sulphur Creek. Shallow soils or exposed bedrock are common on steep slopes of the Suiattle River subwatersheds.

Soils consist of continental glacial outwash, landslide deposits, and alluvium. These soils are found both as veneer over bedrock or under-lying the alluvium found in the river channel and floodplains. Soils are characterized as gravelly/sandy loams. Various size cobble/ boulders are found randomly throughout the alluvium in the valley bottom. Suiattle Road 26 is primarily located on a wide terrace of alluvium adjacent to the valley wall on the north side of the river. Due to the shallow, coarse soils, water storage capacity within the sub-watersheds of the Suiattle is low and heavy rain and rain-on-snow storms produce rapid runoff.

Flood events are common, with seven "major" flood events (1975, 1980, 1989, 1990, 1995, 2003 and 2006) occurring in the past four decades (1970-2010). Because of this history of flood damage and in order to reduce the risk of further damage, the Forest has spent considerable time and resources on road flood-proofing and upgrading.

Hydrology

The United States Geological Survey (USGS) operates a stream gauge (Sauk near Sauk #12189500) located at River Mile (RM) 5.4 on the Sauk River, 7.8 miles downstream of the Suiattle River. The Sauk River gauge has been in operation since 1911 except for a period between 1913 through 1928. There are no active stream gages on the Suiattle River. A flood frequency curve was developed using the annual peak flow record for the period available at this gauge and the USGS "PeakFQ" program. Flood frequency data were also recently analyzed and published in a report on hydraulic, hydrologic, sediment, and habitat conditions in the upper Sauk River (R2 Resource Consultants 2008).

The October 2003 flood event was large and intense enough that a record flow was experienced at this gauging station. The severity of this storm resulted from heavy rain at a much higher elevation than usual. Normally, high elevation snow (above 5,000 feet) is buffered and protected from melting by lower temperatures and the depth of snow. However, in October 2003, heavy rain fell at elevations from 6,000 to 10,000 feet on bare ground or shallow snow, and permanent snowfields and glaciers softened and melted from the warmest September on record.

Table 10 lists the 10 highest flows recorded by the Sauk # 12189500 gauging station and converted to Suiattle River flows based on watershed area:

Table 10: Peak Flows of the Suiattle River

Date	Flow (cfs)	Return Period Based on Scaling Table ** Data	Comment
2/26/32	32,900	15 year	---
12/22/33	27,200	8-year	---
11/27/49	39,600	30-year	---
2/10/51	30,000	10-year	---
12/04/75	31,400	12-year	---
12/26/80	47,400	60-year	Second largest event
12/04/89	28,700	9-year	---
11/24/90	40,100	30-year	---
11/8/95	38,000	25-year	---
10/21/03	51,000	85-year	Largest event
11/06/06	41,500	35-year	Third largest event

cfs = Cubic Feet per Second ;
Return Periods determined based on Sauk near Sauk River gauge, data scaled by the ratio of Sauk near Sauk Watershed area (714 square miles) and Suiattle River Watershed Area (343 square miles)

Relating flood events to road damage on the Suiattle road system, damage occurred during each event from 1949 on, with the first significant damage occurring during the 1980 flood – a 60-year return period event. Between 1949 and 1980, a period of intense forest road system development, nothing approached a 60-year flood event. However, the 2003 flood – an 85-year event that was the largest event on record, followed by another large event just three years later, resulted in the most extensive damages that have occurred since the 1980 flood.

Channel Dynamics

The Suiattle River cuts deeply into the surrounding mountain slopes about one mile above Sulphur Creek, yet opens into a wide floodplain for most of the way to the Sauk River. While glaciers may have affected the river long ago, much of the current river valley is the result of fluvial deposition and landslide processes. There are deep glacial deposits along the margins of the upper valley while there are large-scale depositional features lower in the river system where the valley broadens. The river moves back and forth in the river valley, becoming progressively wider towards the Suiattle/Sauk confluence. However, the valley becomes narrow in places where bedrock, compressed clays and/or deep landslide deposits constrain the river. In general on National Forest System land, Road 26 traverses along the terraces adjacent to the river crossing major tributaries, such as Buck, Downey and Sulphur Creeks.

The lower portion of Road 26 was originally built on the old Sound Timber Company's railroad grade in the early 1930s and has undergone many relocations and reconstructions since then (Washington DNR-USFS Road Right-of-Way agreement fact sheet, 1969). Some sections (MP 14.4) cross alluvial fans that form at the mouths of tributary streams. During the flooding of 2003, in most cases, high water did not overtop the terrace, thus it does not appear that the road on top of the terrace constricts the active Suiattle floodplain along these areas. In places like Downey and Sulphur Creeks, where the road crossed major tributaries to the Suiattle, bridges were constructed to pass 100-year flows but did not span the entire floodplain and alluvial fan. Road fill material was used to complete the crossing.

The following is a detailed discussion of the channel dynamics at each of the project sites.

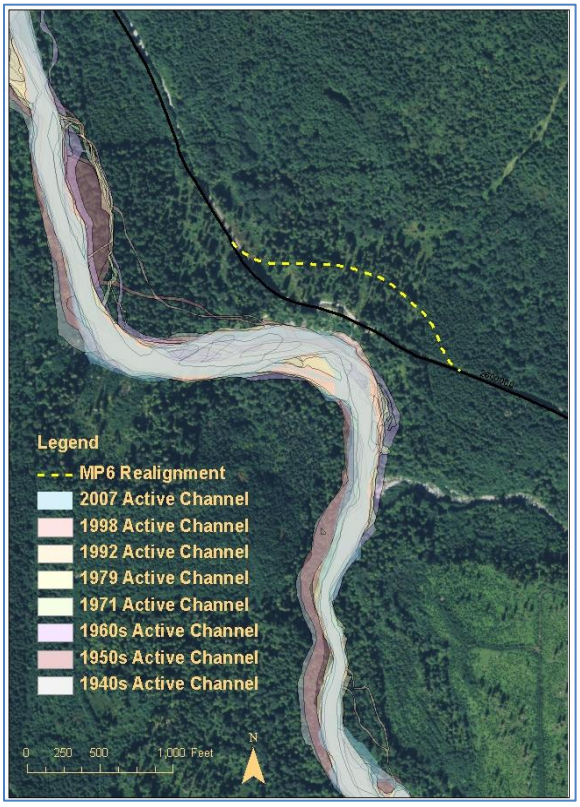
Milepost 6.0

MP 6.0 is located on a high terrace approximately 150 feet above the Suiattle River. Historical air photos dating back to the 1940s show changes in the location of the river. The Skagit River System Cooperative compiled historical air photographs from multiple years spanning seven decades as part of a study to analyze channel movements and erosion risks for the Suiattle River as a whole from Milk Creek (upstream of Sulphur Creek) to its mouth. The compiled photo sets allowed for analysis of changes in historic channel features and prediction of potential future erosion risks (Ramsden and Smith 2010).

Since flow conditions at the time of each photo set varied, simple mapping of wetted channels and comparison between years was not the desirable approach to understanding changes in channel alignments. Instead, an "active channel" was defined, consisting of the wetted main channel, side channels, and their associated gravel bars. The active channel locations resulting from the mapping in the vicinity of MP 6.0 are shown in Figure 13. (Note that all historical channel mapping presented in the remainder of the report is based on the "active channel" mapping.)

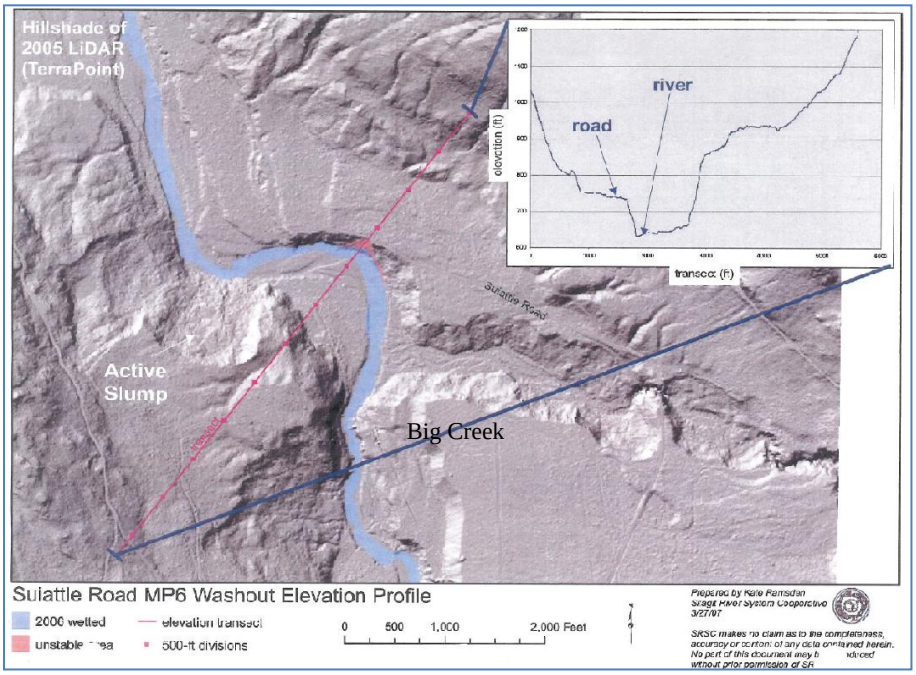
The historical alignments of the river have stayed within a limited corridor in the vicinity of MP 6.0 over the period of the historical air photos. The width of the active channel corridor is approximately 330 feet on average. Underlying "rigid" topographic and geologic constraints within the reach balance the dynamic forces of flow, sediment and woody debris as the river flows through the reach, creating a relatively uniform active channel width.

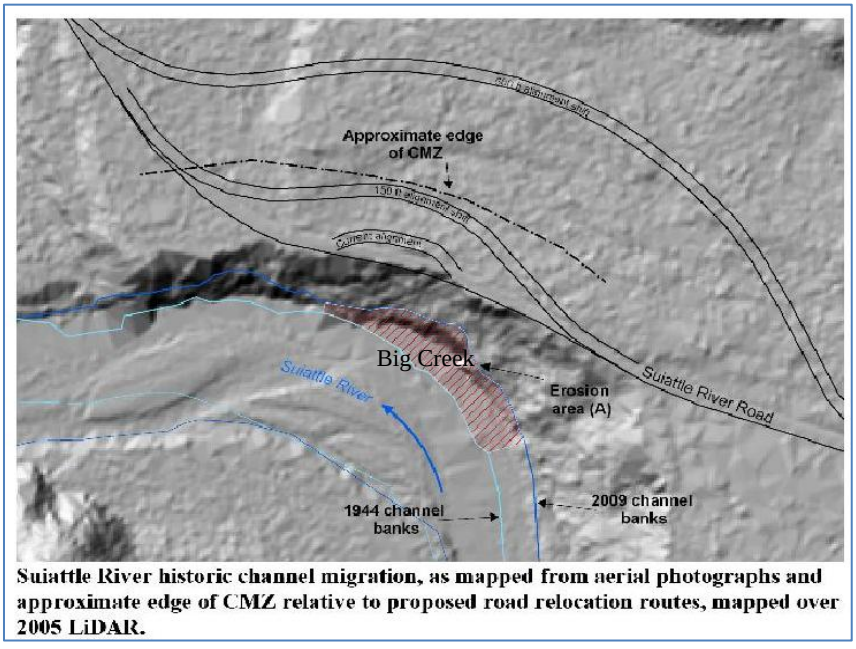
Figure 13. Historic active channels of the Suiattle River in the MP 6.0 Site reach (2011 Air Photo Base)



Constrained river reaches such as the reach through the MP 6.0 site sustain energy within the active channel rather than having energy dissipated in overflow channels or floodplains. The slope to the river at MP 6.0 is located at the outside of a meander bend where erosional forces are active. (See Figures 14 and 15). The river has steadily eroded the base of the slope, causing landsliding of the entire slope, with the river in recent years successively moving to the north – northeast.

Figure 14. Suiattle Road MP6 Washout Elevation Profile (SRSC 2007)





Suiattle River historic channel migration, as mapped from aerial photographs and approximate edge of CMZ relative to proposed road relocation routes, mapped over 2005 LiDAR.

Figure 15. Channel Migration Zone Delineation at MP 6.0 Site (SRSC 2010)

A Channel Migration Analysis was completed for the MP 6.0 site in 2010 (SRSC 2010). The Analysis followed methods in the Washington State Forest Practices Board Manual (Washington Department of

Natural Resources (WDNR 2004)). The analysis used a series of nine air photos taken between 1944 and 2009 to analyze the movement of the river bank and map the eroded area. A geotechnical report was also completed for the site by the Forest Service in 2010 (USDA Forest Service 2010). Based on observations from a nearby slope, the report indicates that a stable slope at the site would be approximately 30%.

Calculations completed to determine the distance the top of the bank would be after adjusting to a stable slope angle, combined with analysis of the channel migration zone were the basis for recommendations of a road setback several hundred feet from the location of the road failure (SRSC 2010, USDA Forest Service 2010).

As a result of the setback recommendations from the channel migration and slope stability analyses, potential reroutes were reviewed in relation to the wetland locations and other resources (see Wetlands Section below for more details on wetlands at MP 6.0). An alignment was selected that would minimize the impact to wetlands and be outside of the channel migration zone.

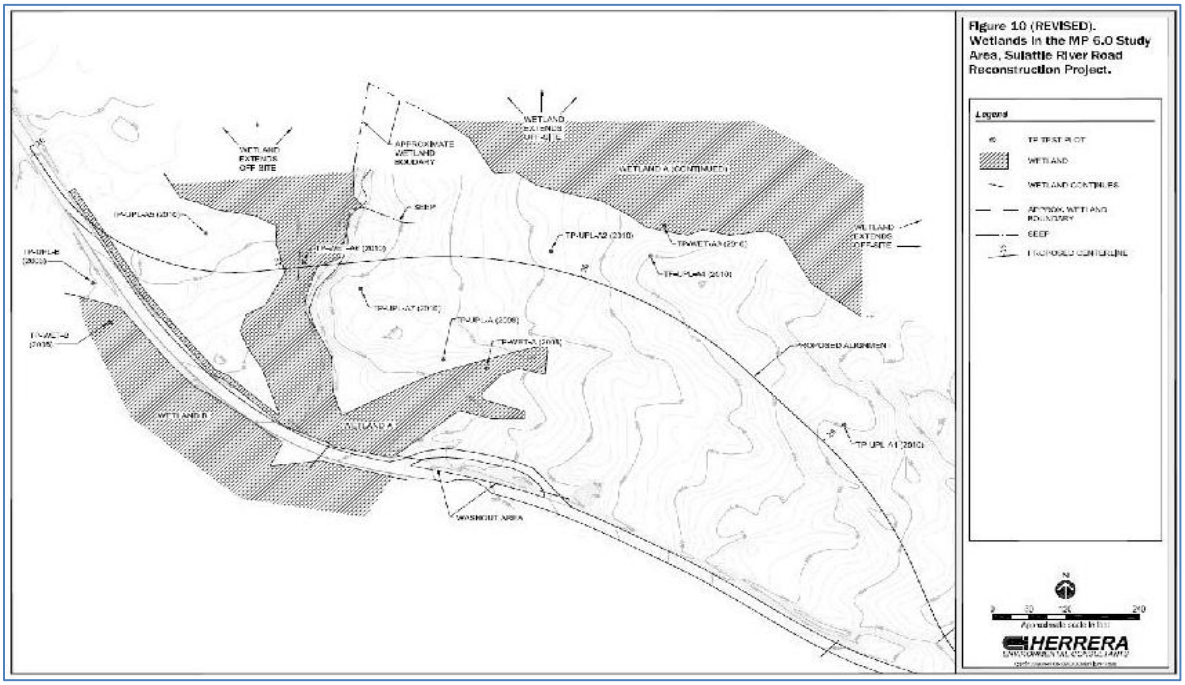


Figure 16. Wetland location and the approximate location of the selected alignment.

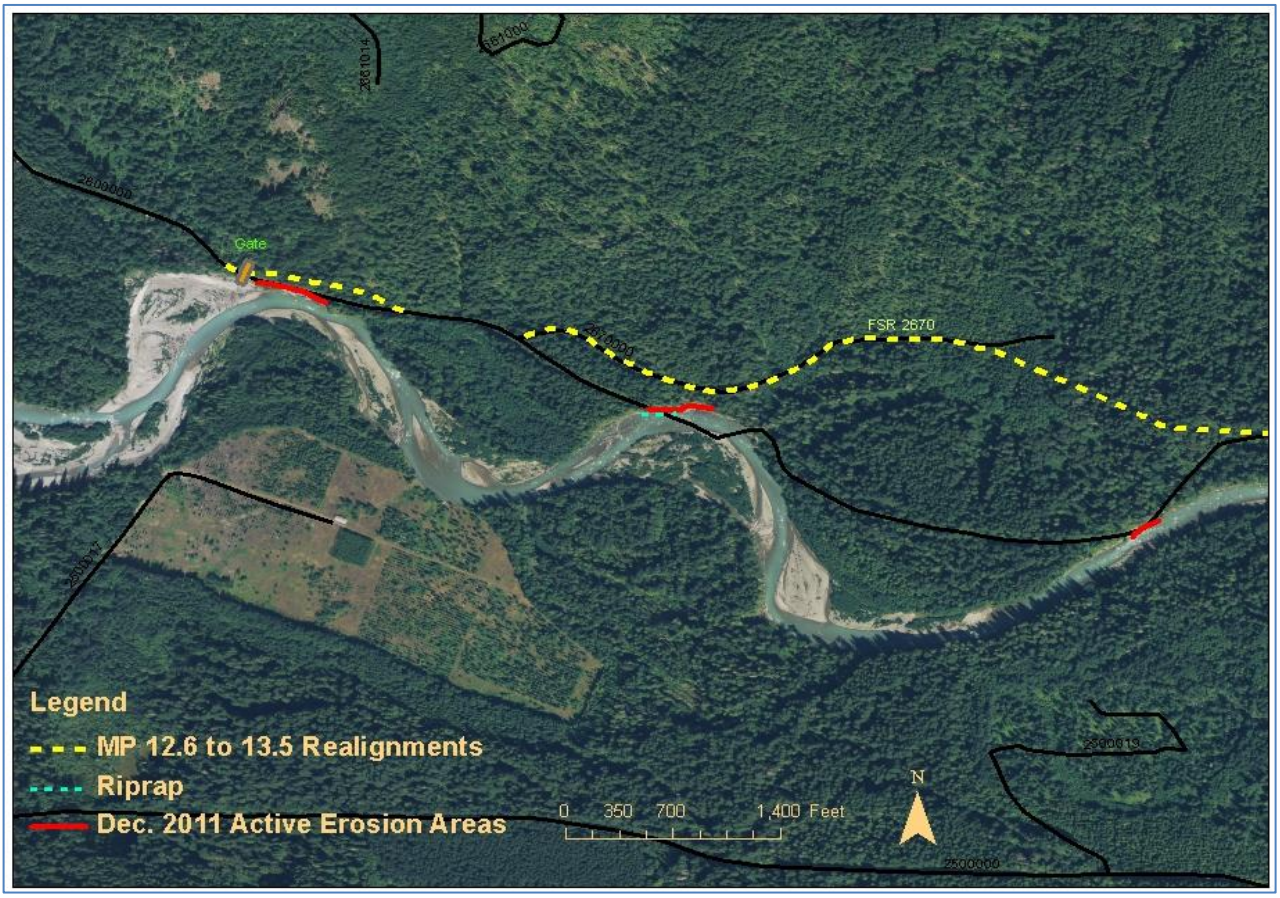
The proposed road alignment was reviewed in the field on July 22, 2010 by representatives of the following groups: Washington State Department of Natural Resources, Regulatory and Lands Sections, U.S. Forest Service, Skagit River System Cooperative, Federal Highways Administration and the Sauk-Suiattle Tribe. Notes from the field meeting included the following summary of the alignment chosen prior to the field trip (FWHA 2010):

"The realignment route is generally 350 to 400' away from the eroded river bank of the Suiattle River at the Milepost 6.0 ERFO site. The route alignment was located to meet: a) the Washington State DNR Board Manual direction regarding road construction in relation to the Suiattle River channel migration zone; b) the long term access needs of the Tribe and the public; and c) resource considerations including wetlands and cultural resources, raised in previous site reviews…"

MP 12.6 to 13.4 and 14.4

The Milepost 12.6 to 13.4 realignment begins at a gate on FSR 26. Active erosion areas as of December 2011 are shown on Figure 17. The slope adjacent to the roadway just east of the gate has failed, reducing the drivable road width. The length of the failure at this location is approximately 150 feet. The road surface at this location is approximately 50 feet above the river.

Figure 17. Active Erosion Areas in MP 12.6 to 13.4 Road Segment



The road at MP 12.6 is founded on a bench cut into the hillslope. Bedrock is visible above the road and at the base of the slope along the river edge (See Figures 18 and 19)

Figure 18. Slope Failure at MP 12.6 (note bedrock outcrop at base of slope / channel edge)

Figure 19. Bedrock Outcrop upslope of the road at the East end of the 12.6 slope failure

Proceeding east from this location, the road descends towards the floodplain of the Suiattle River. The next (middle) active erosion area is in an area of alluvial deposits adjacent to the river (see Figures 17 and 22). The current road surface at this location is approximately 20 feet above the river. The riverbank that is currently actively eroding is approximately 410 feet in length. The proposed new road alignment is partially located on the old roadbed of a spur (FSR 2670) of the Suiattle River Road.

Approximately 250 feet of the eroding bank is lined with rock riprap (see Figure 20). It is unclear when this riprap was placed and whether it was originally part of a longer revetment. The riverbank upstream and downstream of the riprap is currently eroding.

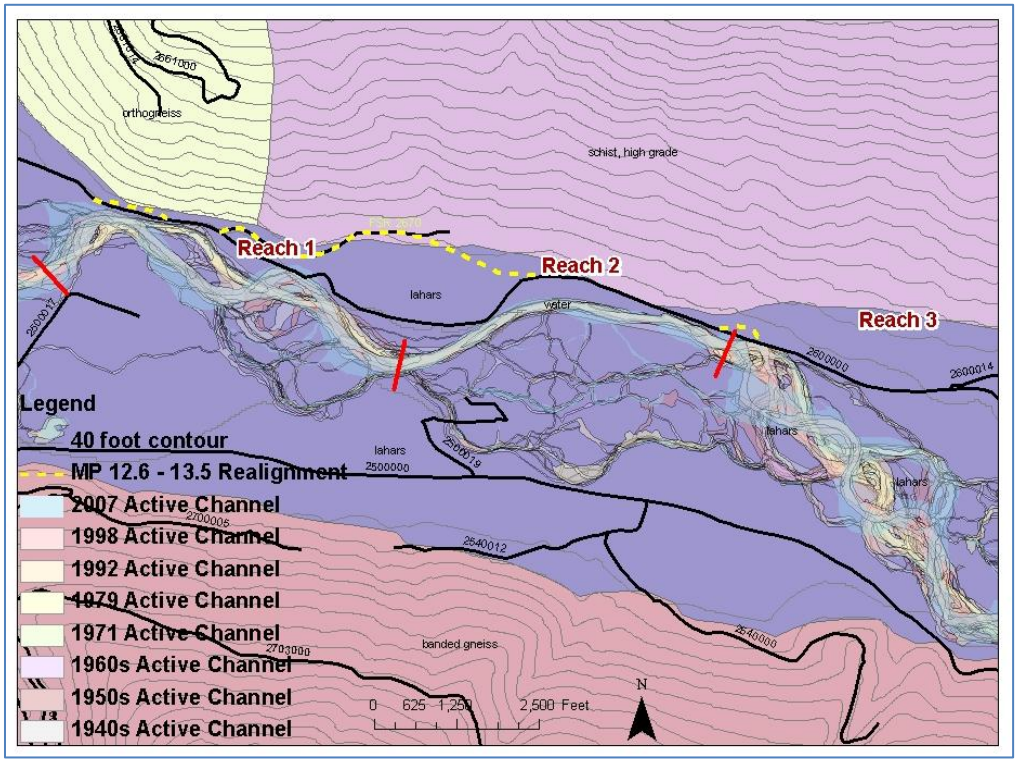
Figure 20. Riprap in active erosion area at MP 13.0

Another active erosion site is located at MP 13.4, the eastern end of the existing road in the section where the proposed realignment is located. The road surface at this location is approximately 5 feet above the river. The streambank that is currently actively eroding is approximately 220 feet long.

At the MP 14.4 site, Road 26 crosses a debris fan of a small tributary channel perched high above the Suiattle River on the outside of a meander bend. The Suiattle River is eroding the toe of the fan and undermining the terrace that the road is located on. In December of 2011, the road was measured as 56 feet above the river along an actively eroding slope, approximately 150 feet long.

In examining the patterns of river movement (based on mapping of historic active channels), the section of the river including the MP 12.6-13.4 and MP 14.4 sites was divided into three reaches (See Figure 21). Study of the geology and topography of this section of river also provides insight into why and how the river has evolved and how it might evolve in the future. The Suiattle River valley bottom is underlain by lahars from the Holocene-Pleistocene, volcanic rocks from Glacier Peak. The slopes to the north and south consist of gneiss and schist (See Figure 21).

Figure 21. Historic active channels of the Suiattle River and Geology in the MP 12.6-14.4 Site reach



Most of the flow in the river has stayed within a larger main channel through Reach 1, particularly in the western portion of this reach. The meanders of the river through this reach have been lengthening and shifting in the downstream direction. The slopes to the north of the river are composed of Gneiss and Schist, with the Gneiss formation on the western end extending down the margins of the river (e.g. at the gate at MP 12.6). Bedrock at this location constrains the lengthening of the meander to the north, so the river responds by lengthening in the downstream direction to the west. The nearly straight northern edge of the historical channel traces are evidence of this constraint.

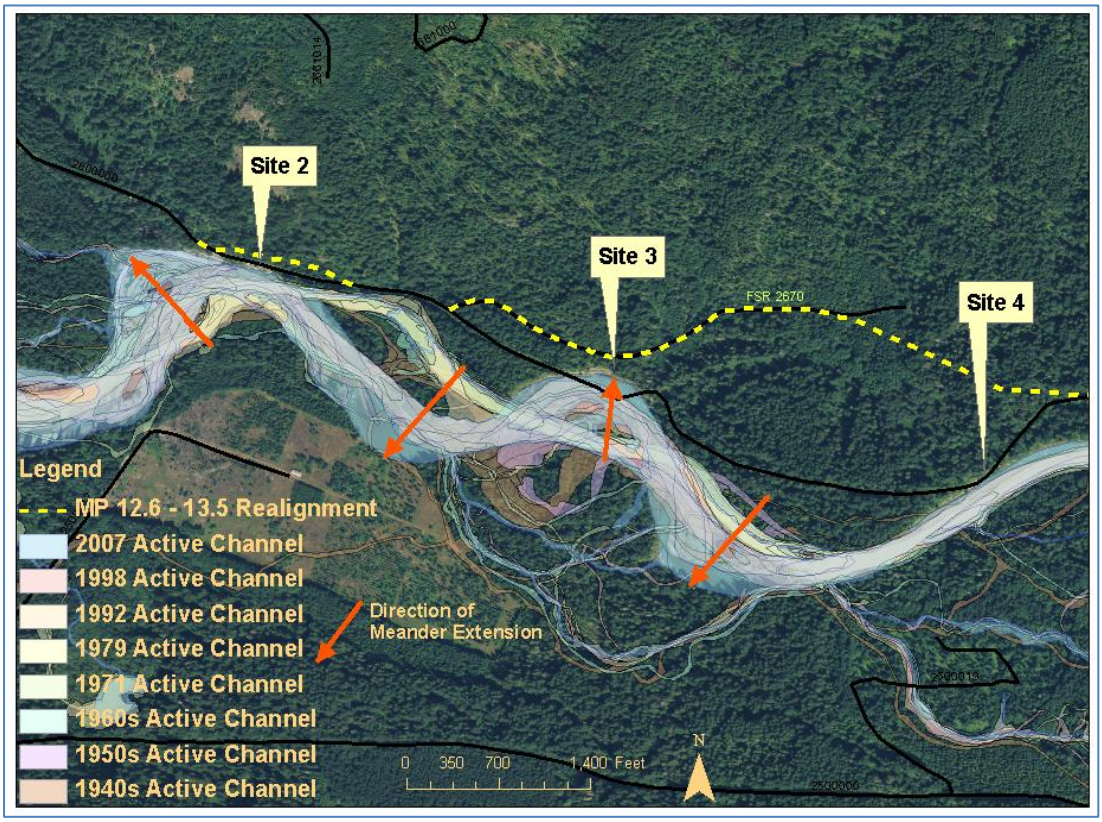
The dividing line between Reaches 1 and 2 is characterized by most of the historic active channel locations necked down to a relatively narrow area. Within Reach 2, the main river has generally maintained a location on the north side of the lahar zone with an intricate network of side channels migrating through the southern portion of the valley. The southernmost channels extend to the edge of FSR 25. Given that most of the historical flow has been in the northern main channel, most of the force of the river has been directed in this area, particularly at the outside of this long river arc. The exertion of this force on FSR 26 has caused the easternmost road failure of the MP12.6 to 13.4 road segment.

The historical active channels of the river through reach 3 display a braided pattern. The main braided "belt" extends across the valley from south to north in the downstream direction. Energy from the river at the western end of this belt is directed at the slope where the MP 14.4 failure is located. This area is the last section of deformable slope as the river runs up against the schist bedrock slopes a short distance downstream.

Figure 22 is a view of historical channel movements in the river adjacent to the MP 12.6-13.4 road segment and displays locations where the river is extending its meanders. These locations are where the

main direction of force is exerted by the river and where erosion is occurring and will likely continue to occur in the future. Meanders have lengthened by 110 to 430 feet in the 0.8 mile stretch of river over the 40-year period.

Figure 22. Historic Active Channels in the MP 12.6 to 13.4 Site Reach



MP 20.8, Downey and Sulphur Creek Sites

Erosion of a road segment approximately 300 feet long occurred at MP 20.8, primarily as a result of erosion at the toe of the slope by the Suiattle River. The road in this location is approximately 25 feet above the river and is located on a bench cut into the hillside. The slope extends approximately 100 feet above the roadway up to a flat, natural bench area.

Air photos of the vicinity of the 20.8 and Downey Creek sites from 1992 and 2011, display a channel reach that has widened and filled with sediment between those years. Several factors are likely responsible for the deposition of sediment in this area: 1) During and just after flood events, flows entering the river from Downey Creek cause turbulence at the confluence, reducing velocities, spreading flow over a wider area and causing sediments to drop out from the water column, 2) The main direction of river flow upstream and through the Downey Creek confluence has been towards the hillslope at MP 20.8 As river flows impact the hillslope, energy is lost and backwater causes the river to slow and deposit sediment, and 3) The cross sectional width of the area through which flow has occurred in historical active channels is greater just upstream of the confluence with Downey Creek as it is downstream of the MP 20.8 site. This "bottleneck" is also likely to cause backwater and sediment deposition. (The downstream reach has historically been straighter than the reach upstream of MP 20.8. It is unclear

whether these differences are a result of changing sediment loads in the downstream direction or underlying geologic or topographic factors.)

The result of the flow and sediment dynamics described above is higher turbidity through the widened reach of the Suiattle, particularly the main river channel on the south side of this migration corridor, as compared to the localized area where Downey Creek enters the Suiattle. Additional factors contributing to turbidity differences are the differences in headwater elevations of Downey Creek and the Suiattle River, the glacial-generated sediment and turbidity of the Suiattle River vs. the mountain streams feeding Downey Creek, and the re-suspension of sediments deposited farther out in the river from the immediate confluence.

At sites #7 and #8, Road 26 traverses the alluvial fans and crosses the channels of major tributary streams - Downey and Sulphur Creeks. The Suiattle River does not directly interact with the road at the Downey and Sulphur Creek sites, except that when flows in the Suiattle River are high, water elevations in the tributaries are raised and flow under the bridges is slowed. Water can "back up" into the tributary streams and flow over stream banks, resulting in erosive eddies that form upstream of the road fill and the deposition of debris that in turn affects how flows pass under the bridges.

The Downey and Sulphur Creek tributaries are high gradient, confined channels with large cobble and boulder substrates. The steep channels and presence of boulders create pools, chutes, and small cascades. Large wood is transported down these high energy channels, but also tends to "jam up" due to the size of the wood and the narrowness of the "inner gorges" or ravines through which the streams flow. Deep accumulations of sediment and debris deflect flow into adjacent valley walls, causing additional recruitment of sediment and woody debris, wood large enough to jam up at the bridges.

Bridge-approach road fill prevents over-bank floodwater from passing directly downstream and causes it to be diverted to the bridge opening. The debris jams that form in these tributary streams can divert a significant amount of the flow into over-bank areas, as occurred in October 2003. This flow has enough energy to scour and erode the road fill; or, if it overtops the road fill, erode a gully through it, carrying sediment downstream.

The bankfull channel width of the Sulphur Creek channel was measured at two locations approximately 0.25 mile (0.4 km) above the bridge and averaged about 64 feet (approximately 19.5 meters). The channel width under the bridge is about 55 feet (16.7 meters). Sulphur Creek approaches the bridge at an approximately a 40 degree angle, which reduces the effective opening under the bridge to closer to 35 feet (10.6 meters). The prominent scour energy is directed at the north abutment. The bridge has arched "stringers" with the lowest point being 10 feet above the low water surface.

While the Sulphur and Downey Creek bridges have plenty of height and opening to pass the 100-year discharge of water, the presence of bridge piers within the bankfull channel and a constriction of the channels can compromise the passage of both debris and flood flow through the bridge sites. The flood of December 1980 caused similar damage at the Sulphur Creek Bridge as the October 2003 event, including scour of riprap and fill from the bridge approach.

Figure 23 is a conceptual depiction of the topographic, geomorphic and hydraulic conditions that likely contributed to the bridge approach failure at Downey Creek and the altered configuration of the Downey Creek / Suiattle River confluence.

Upstream of the bridge, flows are split into a main channel and side channel due to a log jam on the right (west) bank. As a result, a larger percentage of flow continues in the main channel to the bridge. The

combination of: 1) flows that do pass through or over the log jam and 2) the western bridge approach embankment have caused negative effects downstream of the log jam as follows.

Erosion of the bed of the side channel has caused a culvert that was likely originally installed with its inlet at the elevation of the streambed to become perched. As a result, flows through this culvert to the downstream channel and original western side of the Downey Creek mouth only occur when flows in the side channel are large enough to raise the water surface above the culvert inlet. Hydraulic connectivity has been altered to the channel downstream of the culvert, which under most conditions now only conveys groundwater seepage flowing through the bridge approach embankment.

The orientation of the side channel, main channel and the presence of bedrock on the eastern side of the bridge opening cause energy to be directed to the right (western) bridge abutment (See Figure 23). In addition to this energy causing damages to the bridge infrastructure, erosion of the abutment soils contributes sediment to Downey Creek, increasing turbidity.

The proposed work at the Downey Creek site is depicted in Figure 24. Removal of the embankment and replacement with a series of bridge extensions would achieve the following:

- Re-establish the original channel cross section and allow for the natural, unconstrained evolution of the mouth of Downey Creek
- Restore the composition of the natural channel bed and banks – e.g. rather than a scoured side channel
- Allow for the natural transport and deposition of sediment and woody debris
- Restore the hydraulic interactions of the original Downey Creek / Suiattle River confluence

Figure 23. MP 20.9 - Downey Creek Alluvial Fan Current Site Conditions

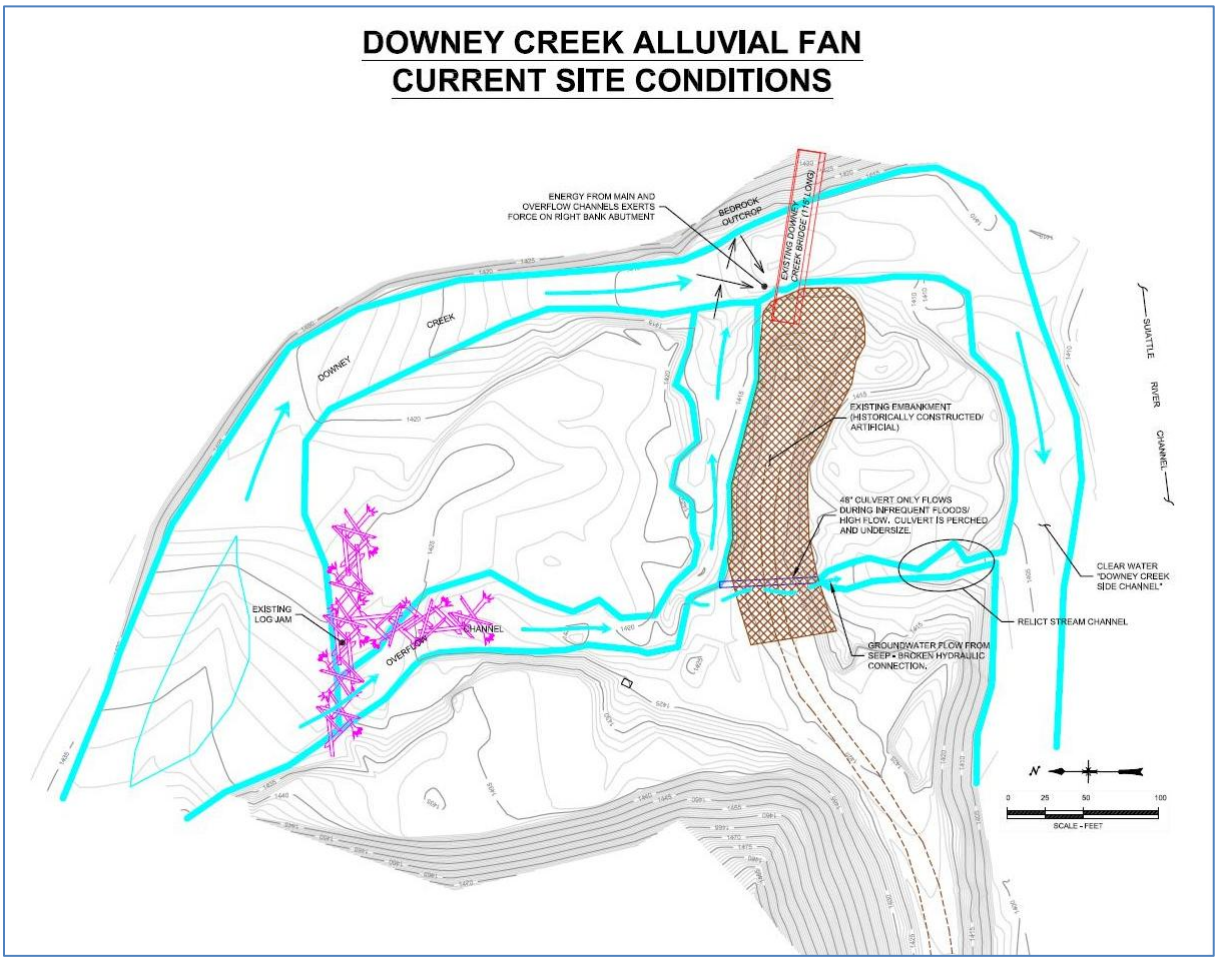
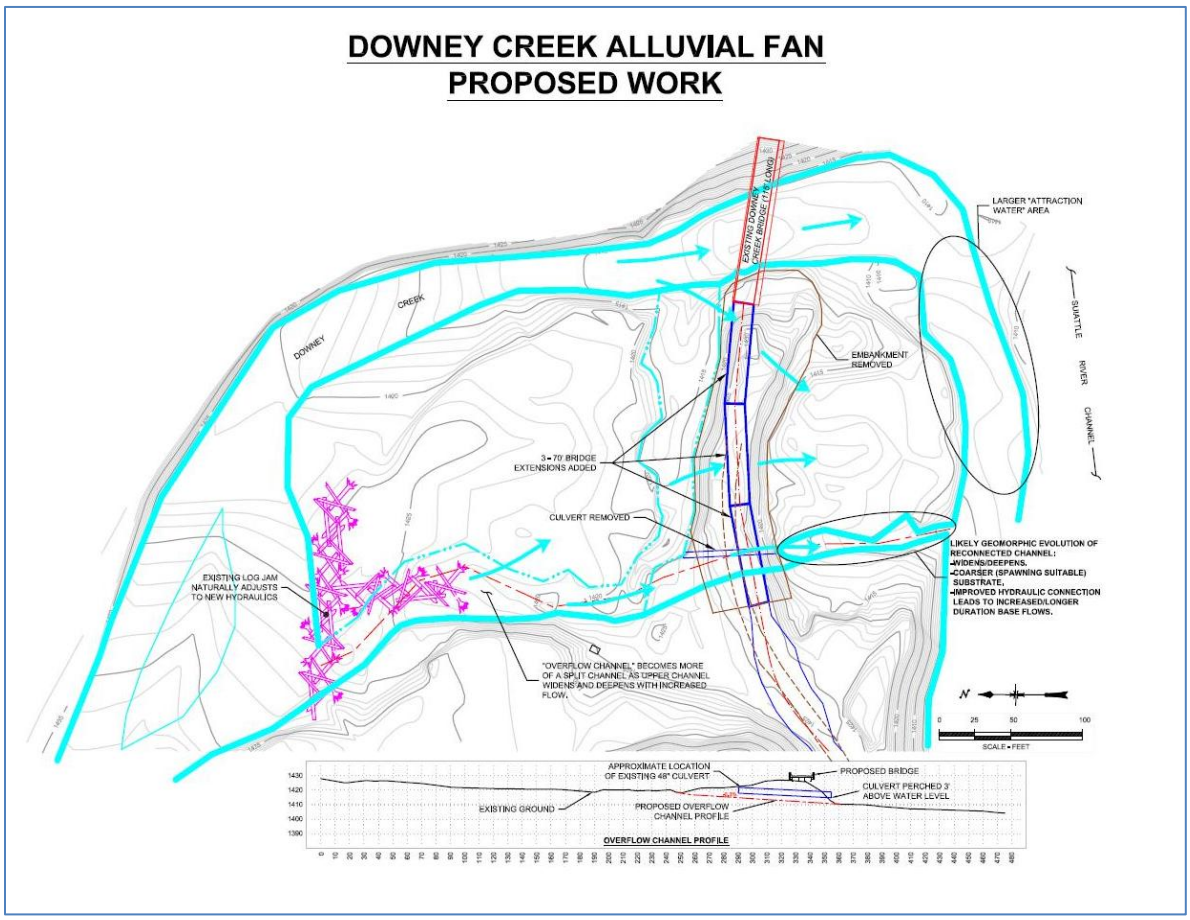


Figure 24. MP 20.9 - Downey Creek Alluvial Fan Proposed Work



Water Quality

The Clean Water Act (CWA) of 1977 and subsequent amendments make it unlawful for any person to discharge any pollutants into waters of the United States, unless a permit is obtained under provisions of the act. The Environmental Protection Agency (EPA) delegated implementation of the CWA to the states and the State of Washington recognizes the Forest Service as the designated management agency for meeting CWA requirements on National Forest System lands.

Washington State periodically prepares a list of all surface waters in the state impaired by pollutants. No impaired water listings are found for the Suiattle River on the 2008 Water Quality Assessment 305(b) report and 303(d) list. Best management practices with the proposed road construction would minimize or eliminate the introduction of pollutants into surface waters. Other chemicals and nutrients would not be influenced by the proposal.

Temperature

No stream temperature data were obtained or reviewed for this analysis because the proposed project would not change conditions that affect stream temperature. Sulphur and Downey Creeks are intact drainages with mature riparian forests. The Suiattle River in the project area is wide and sediment-laden, and some of the riparian forests were harvested in the past. Therefore there is considerable exposure of

the channel to sunlight and some warming is expected due to the exposure even though summer stream flow is predominantly from cold glacial melt water.

Sediment

Sediment plays a major role in the channel dynamics of the Suiattle River. The landscapes of the watershed produce large quantities of sediment from active debris and avalanche terrain, glacial outburst flooding and stream bank erosion. Limited information is available; however, Glacier Peak's Chocolate Glacier adds dramatically to the sediment load in the Suiattle River. For example, in 1938 a major Chocolate glacial outburst flood initially deposited about 167,000 tons of debris over 15 miles from Glacier Peak down into the Suiattle River (Slaughter 2004). Smaller glacial outburst events along with erosion of prior deposition have occurred in this area delivering sediments into the Suiattle River. However, the exact amount of sediment loading is not known, it is assumed substantial.

Glaciers and glacial terrain on Mt. Rainier are estimated to produce approximately 19,000 tons of sediment per square mile/year (Metcalf 1979). In contrast, Swanson (1981) estimated a range of sediment production from forested lands of 100 to 200 tons per square mile/year. There is no known sediment production estimate for the Suiattle. However, applying the Mt. Rainier estimate of sediment production for glacial and debris avalanche chutes in the Suiattle watershed, and assuming that approximately five square miles of the watershed is in this terrain, an estimate of background sediment production would be approximately 146,000 tons of sediment[6]. During a major flood year such as 2003, the background erosion rate would be much greater than 146,000 tons.

Wetlands

The characterization and quantification wetland effects was initiated with the wetlands delineation. This delineation was used to both determine where wetlands and streams are located and to classify them according to regulatory guidance. Wetlands for this project were delineated and documented in two reports (Hererra 2008 and Hererra 2011). The reports present detailed information at each site based on the following:

- Wetland determination and delineation activities within the project site using the routine method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Interim Supplement to the U.S. Army Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region* (Environmental Laboratory 2008), and the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997).
- Classification of all delineated wetlands using the U.S. Fish and Wildlife Service classification system (Cowardin et al. 1979).
- Classification of all delineated wetlands using the hydrogeomorphic (HGM) classification system (Brinson 1993).
- Classification of all delineated wetlands and assessment of their functions using the revised Washington State Wetland Rating System for Western Washington (Hruby 2008).
- Delineation of the ordinary high water (OHW) mark along the river and stream channels within the project site using the definition provided in Washington Administrative Code (WAC) 173-22-030[11], and stream classification based on the Washington State water typing system.

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[6] *5 square miles of glaciers in Glacier Peak and Suiattle headwaters areas x 19,000 tons per square mile = 95,000 tons The watershed is 344 sq. mi.; 344 – 5 sq. mi. covered in glacier = 339 sq. mi. remaining x 150 tons per year = 50,850 tons.*

Based on data from current designs, the wetland area that would be affected by the proposed action is approximately 0.66 – 0.8 acres.

Riparian Reserves

The eight damaged sites involved with the Suiattle Road project are located within or adjacent to Riparian Reserves. The Northwest Forest Plan Record of Decision (ROD (USDA Forest Service 1994b) defines Riparian Reserves as areas along all streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. Riparian Reserves are mapped overlaying all other land allocations.

Riparian Reserve Standards and Guidelines for Road Management in the ROD (p. C-32, 33) that are relevant include the following:

- ***RF-2:*** For each existing or planned roads, meet Aquatic Conservation Strategy objectives by:
  - Minimizing road and landing locations in Riparian Reserves;
  - Minimizing disruption of natural hydrologic flow paths, including diversion of stream-flow and interception of surface and subsurface flow;
  - Restricting side-casting as necessary to prevent introduction of sediment to streams; and
  - Avoiding wetlands entirely when constructing new roads.
- ***RF-3:*** Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:
  - Reconstructing roads and associated drainage features that pose substantial risk;
  - Prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected; and
  - Closing and stabilizing or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy Objectives and considering short-term and long-term transportation needs.
- ***RF-4:*** Culverts, bridges, and other stream crossings … shall accommodate at least the 100-year flood, including associated bed-load and debris … Crossings would be constructed and maintained to prevent diversion of stream-flow out of the channel and down the road in the event of crossing failure.

Riparian Reserve Standards and Guidelines for Recreation Management (ROD p. C-34) that are relevant are as follows:

- ***RM-1:*** New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.
- ***RM-2:*** Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

Riparian Reserve Standards and Guidelines for Watershed and Habitat Restoration (ROD p. C-37) that are relevant are as follows:

- ***WR-1:*** Design and implement watershed restoration projects in a manner that promotes long-term integrity of ecosystems.
- ***WR-3:*** Do not use mitigation or planned restoration as a substitute for preventing habitat degradation

The Suiattle River watershed analysis (USDA Forest Service, 2004) found riparian conditions associated with the Suiattle River are predominantly good. The percentage of impaired riparian reaches or reaches with immature vegetation ranged from zero to 18 percent (Suiattle WA Chapter 2 p. 11). The Downey and Sulphur Creek basins have near or above 90 percent of all riparian stream links, and have greater than 70 percent conifer in their riparian buffers. Existing riparian conditions fulfill important functions of providing shade, supplying large woody material, filtering pollutants, and providing critical elements for bank stability.

Environmental Effects

The study area for the environmental effects analysis is the Lower and Upper Suiattle River Watersheds (HUC 10 numbers 1711000603 and 1711000602, respectively). The damaged sites that are the primary focus of the assessment of environmental effects are: Road 26 MP 6.0, (Site #1), MP 12.6 (Site #2), MP 13.0 (Site #3), MP13.4 (Site #4), MP 14.4 (Site #5), MP 20.8 (Site #6), Downey Creek MP 20.9 (Site #7), and Sulphur Creek MP 22.9 (Site #8). The Suiattle Road is 23.2 miles in length and the current closure gate is located at the MP 12.6 damage site. There are 10.6 miles of FSR 26 that are currently closed to the public use of motorized vehicles beyond the gate.

Soils, Channel Dynamics, and Water Quality Environmental Effects

The following section presents environmental effects for each of the alternatives related to soils, channel dynamics, and water quality.

3.8.1 Alternative A (No Action):

Effects Common to All Sites

Major portions of the road parallel the Suiattle River and are located across lower hill-slopes and floodplain terraces situated within, and adjacent to, the channel migration zone. There are several locations subject to washouts during floods. Road segments within the migration zone may continue to be at risk of damage as long as the road is maintained at these locations.

Temporary road realignments would also contribute to local instabilities as a result of soil compression and covering, removal of vegetation and dynamic loading as vehicles cross.

Roads, in general, are known as sediment sources even when routinely maintained. Leaving the road inaccessible beyond any of the sites would result in ditch drainage function to progressively deteriorate over time. Non-functional ditches are more likely to cause uncontrolled flow over road surfaces, saturating road fill slopes, causing erosion and slope failures and thereby increasing sediment yield to aquatic systems. Without maintenance, culverts are at risk of becoming plugged, causing floodwaters to overtop culvert fills with the same resulting effects as non-functional ditches. Over an extended period, probably decades, natural processes would regenerate vegetation on most of these road surfaces and sediment production would return to natural levels.

No road construction projects would occur if this alternative were selected. Road 26 would continue to be blocked to vehicle traffic at Site #2 (MP 12.6). The temporary road repair at Site #1 (MP 6.0) would be at

risk for future washouts due to river-induced erosion at the toe of the riverbank slope and resulting landslides.

Large flood events would continue to erode portions of the terraces on which Road 26 is located, resulting in likely wash outs of Road 26 between MP 6.0 and the end of the road. Not repairing the road, nor restoring the damaged areas, leaves the damaged sites vulnerable to continued erosion. Road failures are likely at sites #2 (MP 12.6), #5 (MP14.4), and #6 (MP 20.8) due to river-induced erosion of the toe of the riverbank slope and resulting riverbank slope failures. Erosion of additional road segments would likely occur at Sites #3 (MP 13) and #4 (MP13.4) due to landward river migration (extension of meanders). Floods in Downey and Sulphur Creeks and/or the Suiattle River would continue to erode road fills at the bridges. Large wood would continue to jam above and is likely to collect on the bridge abutments at Downey and Sulphur Creeks. There is the potential that a major avulsion event could occur at the bridges, resulting in flows redirected from bridge openings to adjacent areas. Major avulsion events would release large amounts of sediment in short periods of time, causing increases in turbidity in receiving waters.

Site-Specific Effects

Site #1 (MP 6.0)

Channel migration and slope stability analysis suggest that the temporary roadway in its current location at MP 6.0 is at risk of failure. In the future, the river will continue to migrate inland, incrementally eroding portions of the approximately 80-foot tall terrace where the temporary bypass road is located, as well as additional segments of the original road alignment. Large amounts of sediment would enter the river in short periods of time due to slope failures, causing acute increases in turbidity.

Site #2 (MP 12.6)

This site is in a reach of the Suiattle River where meanders have been lengthening and shifting in the downstream direction. The slopes to the north of the river are composed of Gneiss with some colluvium at the surface, with the Gneiss formation extending down the margins of the river (e.g. at the gate at MP 12.6). Bedrock at this location constrains the lengthening of the meander to the north, so the Suiattle River responds by lengthening in the downstream direction to the west. The near straight northern edge of historical channel traces is evidence of this constraint. The force of the river is expected to continue to work the slope at MP 12.6 and be deflected to more deformable areas to lengthen its meander downstream.

A geotechnical report completed in 2009 provides background on the site geology and risks of slope failures at MP 12.6 (SK Geotechnical 2009). The report indicates that there are numerous existing landslides in the MP 12.6 to 13.4 realignment area, with continuing slope failures in the vicinity of MP 12.6 likely to occur under the No Action Alternative. These slope failures would continue to contribute sediment into the Suiattle River, increasing turbidity.

Sites #3 and #4 (MP 13.0 and 13.4)

The meander bend at Site #3 is lengthening towards the north and actively eroding the terrace bank (see Affected Environment discussion above). In the last 40 years, the northern riverbank associated with this meander bend has shifted approximately 430 feet to the north, with the most extensive channel movement occurring during less frequent flood events when river energy is greatest. The continued movement of the river to extend its meanders is a natural occurrence and the presence of the current road and the temporary realignment at Site #3 would have a negligible effect on the river's movement.

The 250 feet of riprap (see affected environment section above) that is present at Site #3 would continue to influence the river's movement. The U.S. Army Corps of Engineers completed a detailed review of the effects of riprap on riverine and riparian ecosystems in 2003 (U.S. ACOE 2003). The effects of riprap were evaluated relative to 15 river and riparian functions in five general categories. Riprap was found to adversely affect the general categories of: evolution through morphological processes, continuity of sediment processes, and provision of habitat. Specific functions that were found to be adversely affected included stream evolution, riparian succession, and sedimentation. Canada's Department of Fisheries and Oceans completed an evaluation of the effects on fish and fish habitat from streambank protection using riprap (Quigley and Harper 2004). The study suggested that depending on the scale and scope of the riprap, when examined at the watershed scale, negative and potentially cumulative effects due to riprap were restricted lateral channel migration, decreased natural sediment deposition, reduced recruitment of gravel and large woody debris, and reduced ability to attenuate flood peaks.

The retention of riprap at this location would not support several Aquatic Conservation Strategy Objectives, including: maintain and restore spatial connectivity including lateral drainage network connections in floodplains, wetlands and upslope areas; and maintain and restore the physical integrity of the aquatic system, including shorelines and banks. These effects at Site #3 would persist under the No Action Alternative.

While the river meander bend at Site #4 has been moving at a slower rate than the meander bend at Site #3 (3 feet per year as opposed to 11 feet per year), the overbank area is more susceptible to erosion simply due to its close elevation to the river (5 feet above the river at Site #4 vs. 20 feet above the river at Site #3). It is likely that the road in this vicinity would be eroded away in the next 5-10 years.

Site #5 (MP 14.4)

The road at MP 14.4 is located on glacial till and lahar deposits above the wetted channel of the Suiattle River. Field reconnaissance of the site verified soil characteristics. The river is likely to continue migrating into the toe of the unstable bank at this site, eroding away under the road. The no action alternative leaves the temporary road at risk of being undermined and washed out. It is expected that the river would continue to erode the slope below the temporary road.

The 36-inch culvert at the unnamed stream crossing (temporary road) would remain in place at Site #5. This culvert is modeled as undersized and located in a slope above the Suiattle River that is at risk of failure due to additional river erosion. Additional slope failures (with or without Road 26 maintenance) would continue to contribute pulses of sediment to the Suiattle River, and contribute to turbidity.

Site #6 (MP20.8)

The no action alternative would likely result in a road failure from one or two mechanisms acting on either the slope above the road or below the road or both. A slope stability assessment was completed for the slope above the roadway (USDA FS 2011). This assessment found that the current "factor of safety" (FOS, the ratio of resisting forces to driving forces) is close to one. A factor of safety (FOS) larger than one indicates stable conditions and less than one indicates unstable conditions. The slope stability assessment report characterized the potential failure of the slope above the road as follows: "All of the evidence that we collected suggests the most likely failure mode is shallow translational failure roughly parallel to the ground surface on the steeper sections of the slope. Observations of site history, slope morphology, subsurface conditions, monitoring, and stability analysis are all consistent with this conclusion" (USDA FS 2011).

If a shallow translational failure were to occur at MP 20.8 a large mass of loose sediment and debris would likely be deposited at the base of the slope at Site #6. This area is an extension of Downey Creek under normal flow conditions, but becomes part of the Suiattle River at larger flows. There would be a pulse of material and turbidity in the days following the slide, with reductions in turbidity levels expected as the river works through the slide material. The relative increase in turbidity in the river at any downstream location would depend on the turbidity levels already present at the time of the slide. The composition of the river bed would also be altered for a distance downstream as sediment falls out of the water column and is deposited on the riverbed.

The other source of road failure would be from continued erosion of the toes of the riverbank slope at MP20.8. The main direction of the Downey Creek flow is along the base of the hillslope at Site #6. These flows are expected to continue to be an erosive force working at the toe of the slope with the potential to undermine the slope below the road during high flows. A failure of either the slope above the road or below the road or both would increase material deposited in the Downey Creek flow along the north-side channel of Suiattle River.

Site #7 and Site #8 (MP20.9 and MP 22.9)

Road fill at the Downey and Sulphur Creek Bridges would continue to erode during flood events as the creeks attempt to reoccupy their historical alluvial fans. The amount of fill material eroded depends on the size of the flood event. Most likely, the fill would be eroded over decades from several high flow events. Floodwaters would likely overtop the Road 26 bridge approaches at the lowest point and either erode the road prism at that point, or flow down a ditch or road surface until the water could flow across the road, eroding the road at that location.

The constrictions at the bridges increase the risk of high water scour under the bridge and water backing up upstream of the bridge. This increases the risk of water overtopping the approach fill, thus causing additional sediment delivery to the Suiattle River.

Downey and Sulphur Creeks have large amounts of old-growth timber in their stream channels that could be set into motion during flood events. This wood is large enough to jam at the bridge sites, which would put the bridges and road at risk of failure. If a jam formed, the amount of scour around the bridge site could cause more road fill to be lost in a large event.

3.8.2 Alternative B

Effects Common to All Sites

Over all, the short-term effects of repairing / realigning road segments at washouts on the channel dynamics and sediment regime of the Suiattle River would be minimal. Construction work would occur outside the ordinary high water mark (OHW) and on the fringes of the valley. Very little sediment would be created during construction activities because erosion and sediment control Best Management Practices (BMPs) would be used and construction would be done primarily during the dry season. Road fills would be outside the OHW and consist of large rock and therefore would not produce measurable sediment.

Approximately 11 acres of ground disturbance would occur under both alternatives B and C with road reconstruction, riprap removal and road rehabilitation. Negligible effects would occur to peak runoff rates or streamside shade / stream temperatures due to vegetation removal at any of the sites.

Road lengths of proposed future and current roadway alignments were scaled from geo-referenced engineering plans in GIS for sites #1 through #5 where sites with realignments of 50 feet or greater would occur. The net difference in open road was found to be negligible. The old road beds would be decommissioned, with the roadway soils de-compacted (ripped) and in some locations. Therefore, the net effects of Alternative B on soil compaction or puddling is expected to be negligible. Erosion would continue to occur along terraces with road segments associated with eroding riverbanks. Differences in these effects compared to the No Action alternative are negligible; particularly over time as decommissioned road segments are re-vegetated.

There may be some minimal short term sediment generated and delivered to the river due to construction activity occurring in close proximity to the river. Implementation of appropriate erosion and sediment control measures outlined in the project BMPs would minimize this risk. Erosion control measures would separate the work area from the active flow of the river during construction and reduce sediment delivery into the river. Other techniques (silt fencing, seeding, and mulching of disturbed soil areas) would further reduce the potential for erosion and sediment transport to the river.

Washington State water quality standards include a narrative standard for sediment and numeric criteria for turbidity. The narrative standard prohibits sediment levels that would impair conditions for beneficial uses (in the case of the Suiattle River, salmonid spawning and rearing). The turbidity standard[7] addresses the amount of suspended and/or dissolved material within the water column, measured in Nephelometric Turbidity Units (NTU)[8].

There are no turbidity measurements in the Suiattle River; however, under most flow conditions turbidity would be expected to be greater than 50 NTUs. Only when there is little or no active glacial melt or storm runoff, would turbidity be low (i.e., between winter storms). Samples taken on the Sauk River near Rockport in 2004 ranged from 3 NTU to 2,200 NTU (Washington Department of Ecology website).

At all sites, any suspended sediments that do pass through BMPs would enter the river system and travel to the Suiattle River with the first high water in the fall. Construction would occur at times of low stream flow conditions (mid to late summer). During the first storm event in the fall, any small amounts of sediment from disturbed areas that are mobilized would be masked by the high background turbidity of the river from glacial origins. Any effects that do occur from site erosion and sedimentation at each particular site are expected to be short term (1 to 2 years).

The introduction of sediment from the proposed road construction would not alter channel processes or aquatic habitat. Any physical changes that do result from transport and deposition of sediment would not materially restrict channel migration, floodplain connections, peak flows, or the natural sediment regime. Although some introduced sediment would be transported downstream, with the use of BMPs it is not likely that material generated from construction would cause substantial increases in turbidity in the Suiattle River.

The risk for pollutant introduction from oil, gas, diesel, or hydraulics is increased under Alternatives B and C because machinery would be operating near water. BMPs for equipment operations and maintenance would minimize this risk.

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7 Washington State Department of Ecology Class AA Water Quality Standard for turbidity: shall not exceed 5 Nephelometric Turbidity Units (NTU) over background turbidity when the background turbidity is 50 NTU or less or have more than 10 percent increases in turbidity when the background turbidity is more than 50 NTU.

8 An NTU is a measure of the reduction of light intensity when a light passes through a sample of water.

About 5,000 cubic yards of waste material would be disposed of in the rock pit at MP 3.2 on Road 2680 (1,500 cubic yards from Site #5 and 3,500 cubic yards from Site #7, see description of Proposed Action in Section 3 above) or deposited off-site. The rock pit does not pose any direct sediment delivery risks to nearby streams and only small amounts of material would be lost in transport. The pit is located outside of any riparian reserve.

Under Alternative B, access on the entire road length (e.g. 23.2 miles) would be restored and remain open for future maintenance. Ongoing maintenance of drainage ditches and culverts would reduce the risk of road and associated slope failures due to fill saturation and or erosion. The risk of effects due to sedimentation in the river would be reduced as a result, though any reduction would likely be masked by the typical high turbidity of the river.

With road access restored, camping along Road 26 and at Sulphur and Buck Creek Campgrounds would resume. Dispersed sites and the organized campgrounds would have compacted campsites, but the scale and scope of these sites are a very minor portion of the river drainage. Sediment from these sources has not been quantified, but is estimated at a few dozen cubic yards of fine sediment annually compared with the 146,000 tons of the natural background sediment load of the Suiattle River. The fine sediment would flush through the river system with the other fine sediment from glacial sources. (See additional discussion for Site #8 below).

Culvert upgrades at damaged sites would reduce the potential for floodwaters to overtop road surfaces, erode road prisms and slopes, and cause related slope failures and sediment influx to the river. It is not possible to predict the extent or magnitude of the reduction of this risk; however it may range from elimination of a minimal localized increase in turbidity to elimination of an acute large sediment input that could have caused chronic turbidity problems and alteration of the riverbank and bed.

Site #1 (MP 6.0)

Realigning the road by moving it 350 to 400 feet away from the current eroded river bank would move the road out of the modeled channel migration zone. The road location would have a minimal effect on future channel movement and slope failures. Restoration of natural drainage patterns including wetlands and establishment of vegetation in the area of the old road bed would help to stabilize the slope. Wetlands would hold more runoff and increase recharge rather than directing water to the slope, and roots from vegetation would hold soil against erosive forces (Also see Wetlands Effects Section below).

Site #2 (MP 12.6)

Relocation of the road onto an area underlain by bedrock at MP 12.6 would result in a more stable road. There would be a negligible effect on the continuing natural slope failures in the vicinity of MP 12.6. These slope failures would continue to contribute sediment into the Suiattle River, although the effects would be masked by the typical high turbidity levels in the river.

Sites #3 and #4 (MP 13 and 13.4)

An unstable soils classification was developed for the 1990 Mount Baker-Snoqualmie Land and Resource Management Plan, with such soil types identified as S-8 soils. S-8 Soils are defined as "soils for which clear cutting or road building activities result in a 75% probability of doubling the mass wasting occurrence." S-8 soils are avoided when possible during timber harvest and road building, with adjacent areas (approximately 1/8 mile wide surrounding S-8 soils) also reviewed for special management considerations or needs (USDA Forest Service 1990).

The middle portion of the realignment planned for Sites #3 and #4 would pass through an area where S-8 soils are mapped. The mapped S-8 soil area has two lobes upslope from the proposed road realignment, in association with two un-named streams. Considerations for realignment of the road through this particular area of S-8 soils were: 1) the opportunity to move Road 26 farther away from areas susceptible to channel migration between MP 12.7 and MP 13.8. This road realignment upslope allows for road crossing of the drainages in defined channels vs. across the alluvial fans of the streams in the current road location. The relocation also allows for restoration of floodplain connectivity with what would become the abandoned road segment. 2) the advantage of using the existing Forest Service Road (FSR) 2670 road bed avoids additional compaction of soils and related loss of soil productivity, 3) the proposed alignment would leave FSR 2670 and rejoin FSR 26 in a direct alignment, resulting in minimal new ground disturbance, and 4) culverts in this location would be sized to take into account additional risk of sediment transport in streams running through S-8 soils.

There would be a negligible effect on the ongoing channel migration at Sites #3 and #4 as a result of Alternative B. The riprap at Site #3 which has the potential to influence channel dynamics, would be removed as part of Alternative B road obliteration actions. This removal would allow for free flow of river within the floodplain, with recruitment of large woody debris and other organic materials, and natural erosion and deposition along the riverbank.

While the effects of Alternative B on soils and channel dynamics are expected to be minimal, the movement of the river would continue to threaten the road through erosion of the terrace where the current and proposed roads are located. The western end of FSR 2670 is located at the base of the hillslope (approximately 20 feet above the river) and inland from a river meander bend, so there would continue to be a moderate to high risk of future flood damage. Given the proposed new road is approximately 150 feet from the current riverbank and given the shifts in movement of the river to the north (inland), the new road may continue to be at risk of future high flows. The continued movement of the river to extend its meanders is a natural occurrence and the presence of the road itself on the terrace at the current or proposed location would not impede this movement.

Site #5 MP 14.4

Movement of this road 60 to 80 feet inland would have a negligible effect on channel dynamics. Examination of historical air photos indicates that the active channel of the river has historically shifted location within a constrained "belt" that extends across the valley from south to north in the downstream direction. Energy from the river at the western end of this belt is directed at the slope where the MP 14.4 failure is located. This area is the last section of deformable slope as the river runs up against the schist bedrock slopes a short distance downstream. The river would likely continue to erode the slope along the MP 14.4 site, with the realignment having a negligible effect on this natural process.

A 36 inch diameter culvert near the center of the realignment would be replaced by a larger tall arch culvert. This culvert upsizing would greatly reduce the potential of slope failure due to culvert overtopping. Soils mapping shows S8 soils present in the stream leading to this culvert. The new culvert has been sized to accommodate the increased risk of sediment transport associated with these unstable soils as well as the 100-year flows.

Site #6 MP 20.8

The geotechnical report for Site #6 indicates that while there would still be some risk inherent in the site after shifting the road into the hillslope, the incremental additional risk relative to the No Action Alternative is small: "The predicted change in minimum Factor of Safety between the existing slope and

the proposed cut is small (less than 1%). The low safety factors indicate that some risk is involved [including]…shallow sliding, slough removal, higher road maintenance costs, and long term slope adjustments" (USDA Forest Service 2011).

While there is risk of a shallow translational landslide at Site #6 under Alternative B, there is minimal difference between the risks associated with Alternative B as compared to the No Action Alternative. The difference between the effects resulting from each alternative would be small.

If a shallow translational failure were to occur at MP 20.8, the effects on channel dynamics and water quality would be a large mass of loose sediment and debris deposited at the base of the slope at Site #6. This area is an extension of Downey Creek under normal flow conditions, but becomes part of the Suiattle River at larger flows. There would be a large pulse of turbidity in the days following the slide, with reductions in turbidity levels expected as the river works through the slide material. The relative increase in turbidity in the river at any downstream location would depend on the turbidity levels already present at the time of the slide. Bed material composition would also be altered for a distance downstream as sediment falls out of the water column and is deposited on the riverbed.

Site #7 Downey MP 20.9

Removal of the existing roadway embankment and construction of three approximately 70 foot long bridge spans to the existing bridge span would restore the natural channel cross section at the mouth of Downey Creek. The bridge additions would allow the stream to occupy the entire historical alluvial fan, allowing for natural flow patterns and sediment and large woody debris transport and deposition. (This project was specifically identified in the Skagit Chinook Recovery Plan (SRSC and WDFW 2005)). Current erosion of the road embankment due to the channel constriction under the bridge would be eliminated, reducing sediment production from this source. The side channel that currently runs along the north side of the road embankment would be reconnected with its relic channel downstream, allowing for the full range of flows to occur through this area.

The addition of three new bridge sections with removal of the bridge approach fill would result in the removal of the current road material that provides support and protection of the west end piers of the Downey Creek Bridge. The pier support (which was provided by the bridge approach fill) would be replaced with an apron of bags filled with high strength grout. The bags would be placed around the pier footings to prevent scour of the footings during high flow events that would occupy the restored channel. The estimated 15 cubic yards of proposed pier protection would be a minor volume of material within the conveyance cross section of Downey Creek when compared with the proposed removal of 3,500 cubic yards of embankment.

Site #8 Sulphur MP 22.9

This design would enlarge the area for the channel under the bridge by about 15 feet for a total width of about 65 feet (estimated bankfull channel width is 64 feet). The increased width would add capacity for flood flows and debris passage. All fill removal would occur outside of the current wetted channel (as described in the proposed action).

The alluvial fan downstream from the Sulphur Creek Bridge is less constrained than the alluvial fan at the Downey Creek Bridge, with the closest active channel edge to the bridges at Sulphur and Downey Creeks being approximately 300 feet vs. 100 feet respectively. The additional distance allows for more area for natural channel evolution at the confluence downstream of the bridge, more movement of flows laterally across the mouth, and an incremental increase in sediment transport capacity and debris passage.

However, the bridge pier still poses an obstacle for trapping and causing accumulation of debris during high flow events. A debris jam at the bridge would compromise the added capacity created by this alternative.

With road access restored past the bridge, dispersed use beyond Sulphur Creek would resume over time. Dispersed sites would continue to have compaction and soil disturbance, but represent a limited area in scale and scope within the watershed. The amount is estimated at a few cubic yards of fine sediment annually, compared with the 146,000 tons of natural background sediment load of the Suiattle River. The fine sediment would flush through the river system with the other fine sediment from glacial sources.

The Sulphur Creek campground would be assessed for damage prior to being re-opened to the public. This assessment would include consideration of resources that might be affected by future management of the campground, located adjacent o the Suiattle River.

3.8.3 Alternative C

Alternative C includes the proposed realignments at Sites #1 through #5, and no action at Sites #6 through #8. Alternative C's consequences are a mix of effects from Alternative A and B, with the same consequences as described in Alternative B for Sites #1 through #5 and the consequences described in Alternative A (No Action Alternative) for sites #6 through #8. In addition, effects common to all sites described in each of the previous alternatives would apply depending on whether action at any particular site is planned or not.

Soils, Channel Dynamics and Water Quality Cumulative Effects

The cumulative effects analysis area for soils, channel dynamics and water quality effects is the Suiattle River drainage from the headwaters to the confluence of the Suiattle River with the Sauk River. The effects of implementing either one of the action alternatives could overlap with lingering effects from past projects, from incremental effects of concurrent projects, or from estimated additive effects of projects being planned for the near future. Table 11 displays activities that are being considered in this cumulative effects assessment for soils, channel dynamics and water quality. There are no resulting substantial cumulative effects to soils, channel dynamics or water quality that are expected by implementing either action alternative.

Sedimentation would be the predominant effect caused by management activities with which this project could cumulatively overlap. However, the sediment effects from the proposed project activities would not be measurable due to dilution and masking by the high background sediments, and implementation of project-related BMPs would further minimize effects.

Table 11: Soils, Channel Dynamics and Water Quality Cumulative Effects

Past Projects	Potential Effects	Overlap		Cumulative Effect	Explanation
		Time	Space		
Boundary Bridge Repair: Extend Bridge to better span floodplain	Sediment, Large Woody Debris, Channel Morphology / Flow Routing	No	Yes	No	Constructed in 2009. Minor short-term sediment, improved passage of woody debris and increased conveyance cross section / opportunity for channel evolution are incremental cumulative positive effects.
Suiattle Trail Repairs: Relocate trail between MP 1.5 and MP 3.	Sediment / Water Quality	No	Yes	No	Completed in 2006. Additional work between MP 3 and MP 7 in 2010 and 2011 Minor short-term sediment. Amount was negligible.
Suiattle River Trail Bridge Replace: Replace trail bridge across Suiattle River at beginning of Milk Creek Trail 790	Woody Debris, Sediment / Water Quality	No	Yes	No	Constructed in 2006. Improved routing of woody debris. Amount of sediment produced was negligible.
PCT Flood Repairs: Relocate PCT between Vista Creek and Miners Creek. 3.25 miles of new trail and new bridge over Suiattle River.	Woody Debris, Sediment / Water Quality	No	Yes	No	Project completed in 2011. Minor short term sediment, Amount was negligible. Improved routing of woody debris.
Road 25 Closure/Storage: 2.5 miles of waterbars and culvert removals on Rd25: several miles decommission/closure treatments on Rd. 2550; bridge removal 2510-012	Sediment / Water Quality	No	Yes	No	Work completed in 1990s and 2002. There are no remaining sediment effects due to measures applied during implementation.
Fish Passage Culvert Replacements: Fish passage improvement at Captain Creek and unnamed stream at Rd. 26; Seed Orchard Creek	Sediment / Water Quality	No	Yes	No	Projects are complete (1998 – Captain and Unnamed, 1996 – Seed Orchard; there are no remaining sediment effects due to measures applied during implementation.
Instream treatments: Structures and off-channel projects for spawning and rearing habitats in multiple streams, including Sulphur Creek	Sediment / Water Quality [Habitat Improvement Projects]	No	No	No	Project is complete; there are no remaining sediment effects due to measures applied during implementation.
Grade Creek Roads: Approximately 15.4 miles of road closure and decommission and 3.77 miles of road drainage improvements completed between 2006 and 2010.	Sediment / Water Quality	No	Yes	No	Restored hydrologic connectivity, negligible sediment production due to BMPs implemented during work.

Past Projects	Potential Effects	Overlap		Cumulative Effect	Explanation
		Time	Space		
Road Repairs: Multiple fixes from floods in 1974, 79, 80, 89, 90, 96. Replace fill and riprap, clear and replace with larger culverts along Roads 25, 26, other roads	Hydrology. Sediment / water quality	No	Yes	No	Negligible sediment transport immediately following repairs, improved local drainage / conveyance of floodwaters where culverts upgraded. Minimal cumulative effect for Suiattle River.
Forest Service Timber Harvest: 7810 acres total in WA – 2450 acres 1980 to 1995, 5360 acres 1930 to 1979 mostly by clearcut	Hydrology, sediment / water quality	No	Yes	No	Most recent sales were small and harvested in 1995. No lingering sediment effects. Historically harvested riparian stands are recovering.
Current Projects	Potential Effects	Overlap Time	Overlap Space	Cumulative Effect	Explanation
Road Maintenance and Repairs: Routine road maintenance on Road 26 is brush every 3 years and grade/blade 2 times yearly. ARRA road upgrade projects MP 0.0 to 10.0 on Road 26, Road 25 and Road 27 maintenance.	Hydrology, sediment / water quality	Yes	Yes	No	Ongoing. Effects are small and may overlap in time and space, depends on location, timing, and type / extent of maintenance and subsequent storms. BMPs have and would minimize any cumulative effects
Non-Federal Land Timber Harvest: 12,979 acres (Watershed Analysis)	Hydrology, sediment / water quality	Yes	Yes	No	Diminishing effects over time. No active sales. Harvesting 2004-2009. 416 acres (15 acres harvested in 2001). No instream wood removal; hydrology maintained with canopy retention and buffers. Potential cumulative effect due to overlap in both time and space, but no measurable/significant effects expected to hydrology or fish/habitat conditions, and therefore not cumulative.

Future Projects	Potential Effects	Overlap Time	Overlap Space	Cumulative Effect	Explanation
Road 25 Riprap Removal: Remove 900 feet of riprap on left bank Suiattle River, Decom. 1.1 Miles of FSR 25	Sediment / Water Quality	Yes	Yes	No	Project construction expected in summer 2013. Project BMPs would be implemented to reduce potential sediment transport from project site. Incremental cumulative effect expected to be minimal
Road 2540 Decom: Decommission first 1.23 miles	Sediment / Water Quality	Yes	Yes	No	Project construction expected in summer 2013. Project BMPs would be implemented to reduce potential sediment transport from project site. Distance, relatively flat stream gradient and summer low flows would also minimize sediment transport to River. Incremental cumulative effect expected to be minimal
Marsh Pond Fish Passage Restoration: Modify berm at outlet of marsh pond and outlet channel to improve fish passage	Sediment / Water Quality, Flow	Yes	Yes	No	Project construction expected in summer 2013. Project BMPs would be implemented to reduce potential sediment transport from project site. Distance, relatively flat stream gradient and summer low flows would also minimize sediment transport to River. Incremental cumulative effect expected to be minimal. Inconsequential change in River flows due to altered pond outlet hydraulics.
Suiattle ATM: The 2012 DN and FONSI would decommission approximately 51 miles of road and upgrade 56 miles of road. Decision Notice Pending.	Flow patterns, Erosion and Sediment Delivery, Soil Productivity and Displacement, Water Temperature,	Yes	Yes	No	Natural flow patterns are expected to restored and peak flows decreased, effects of roads on stream sediment production will be reduced, soil productivity and the potential for soil displacement will be positively affected by the proposed road obliteration work, and the net result of all land management activities is a decrease or maintenance of stream temperatures.

3.9 Wetlands Environmental Effects

The following section presents environmental effects for each of the alternatives related to wetlands.

3.9.1 Alternative A (No Action)

Construction of roads can impact wetlands functions by altering water quality, hydrology and habitat. Effects to wetlands under Alternative A are those that have resulted from the original construction of FSR 26 and all subsequent modifications / maintenance. Since the majority of the road system was originally constructed in the 1930s, wetland effects from that original construction have diminished to near zero, given that the on-site wetlands have equilibrated over a long period of time.

The wetlands that are currently located adjacent to the Road 26 have developed into a state of "modified equilibrium" based on the constraints that the road has imposed over the long time period. For example,

in places where the road was constructed through the middle of a wetland, the resulting two wetlands on either side of the road have responded over time with a modified set of baseline soil, plant and hydrologic characteristics.

The road has resulted in long term changes in flow patterns affecting wetlands. Undersized culverts have backed up water in upstream wetlands causing long term changes in wetland hydro-period. Roads aligned close to or directly adjacent to river banks have altered the interaction of the river with floodplain and overbank wetlands, essentially acting as partial levees to floodwaters that might otherwise periodically inundate riparian wetlands and then drain back to the river.

The No Action Alternative would make no changes to Road 26 location within wetlands, no change to road effects on wetland hydrology, and no change in connectivity of wetlands bisected by Road 26. The fill associated with the road approach to Downey Creek Bridge would remain in the historic alluvial fan of Downey Creek, impeding stream flows to a wetland downstream from a large culvert in the road approach to the Downey Creek Bridge.

3.9.2 Alternative B

While the current road alignment has resulted in effects (as described above for Alternative A), movement of the road to a new location would also result in wetlands effects. A sequential process was followed in project design in order to address potential effects from new road alignments. The process as outlined in joint Washington Department of Ecology (Ecology), U.S. Army Corps of Engineers (USACE), and Environmental Protection Agency (EPA) guidance (Ecology 2006) consists of three sequential steps:

- Avoidance of Impacts: avoid wetlands and stream impacts to the maximum extent possible while achieving project goals and balancing potential effects from other sources or to other resource areas
- Minimization of Impacts: reduce the area or extent of effects to wetlands through siting considerations, design features or other approaches
- Compensation for Impacts: Compensation may be accomplished through wetland enhancement, restoration, or creation of a wetland where one previously did not exist. (Enhancement typically involves more limited actions to provide gains in one or just a few of the functions that wetlands provide, while rehabilitation involves actions that broader based, sustainable, and reinstate processes both at the site and landscape scale)

A total of approximately 0.66 acres would be affected under Alternative B. Direct effects would occur at the time of construction as vegetation is removed and road sub-grade material is placed within wetlands. This would result in reduction of the wetland area and in functions associated with the wetland area. Indirect effects would occur following construction, and may include changes in wetland physical structure, amounts of water in wetlands and the fluctuation of water levels, reductions in the ability of wetlands to moderate peak flows and reduce erosion, and reduced hydrologic connectivity upstream and downstream of new road prisms. The effects would be site-specific and negligible on the landscape scale.

Avoidance and minimization of impacts to wetlands was taken into account along with a range of other criteria in selecting road alignments and completing road designs. Following those steps, there remains a need to provide compensation for wetland impacts. Because the old road alignments would be obliterated as part of the project, recreation of wetlands at five mitigation sites within the abandoned FSR 26 corridor was proposed (Herrera 2009 and 2011).

The mitigation sites were identified based on desktop and field review of sites along FSR 26 where historic wetlands likely existed (Herrera 2009). These sites are most likely to succeed because there is a high probability that wetland characteristics (hydric soils, wetland hydrology and hydrophitic plants) would be effectively reestablished. Mitigation sites were reviewed in the field with U.S. Army Corps of Engineers wetlands regulatory staff (Perry 2011).

3.9.3 Alternative C

Alternative C includes the proposed realignments at Sites #1 through #5, and no action at Sites #6 through #8. The resulting mix of effects are those that were identified in Alternative B for Sites #1 through #5 and Alternative A (No Action Alternative) for sites #6 through #8 In addition, effects common to all sites described in each of the previous alternatives would apply depending on whether action at any particular site is planned or not.

Since all of the affected wetlands are associated with Sites #1 through #5 and both Alternatives B and C involve the same wetland effects and mitigations, there is no difference between Alternatives B and C with respect to wetlands in the first

Wetlands Cumulative Effects

The cumulative effects analysis area for wetlands effects is the Suiattle River drainage from the headwaters to the confluence of the Suiattle River with the Sauk River. Table 12 provides details on types and characteristics of wetlands cumulative effects and examples.

Table 12: Types of Wetlands Cumulative Impacts (Washington DOE 1975, modified from Council of Environmental Quality 1997)

Type of Cumulative Impact	Main Characteristics	Examples of Cumulative Impacts
Time crowding	Frequent and repetitive disturbances before the ecosystem has recovered from previous disturbance	Changes in the water regime that increase the depths of water and duration of flooding that, in turn, drowns vegetation not tolerant to prolonged inundation
Time lags	Impacts of disturbance are delayed from the time the disturbance occurs	Changes in water regime that causes a slow shift in the vegetation to species not suitable as sites for laying amphibian eggs
Space crowding	Impacts are occurring in close physical proximity to each other	Construction of new roads and commercial land uses on opposite sides of a wetland, resulting in increased human disturbances, such as noise, lighting, and less upland habitat
Cross-boundary	Impacts occur away from the source	Eutrophication in wetlands and lakes that results from discharges of nutrients in upper watershed
Fragmentation	Changes in the pattern of ecosystems across the landscape	Construction of a subdivision with roads interrupts the natural pathways used by animals for movement between patches of habitat
Compounding effects	Impacts arising from multiple sources or pathways	A small buffer reduces the upland habitat needed for wildlife that is closely associated with wetlands and that allows intrusion by humans and domestic pets

Type of Cumulative Impact	Main Characteristics	Examples of Cumulative Impacts
Indirect effects	Additional disturbances that result from changes in human activities that themselves are a result of the initial disturbance	The additional impacts that result from development after roads or other infrastructure are built. The building of a road has direct impacts but also changes human activities that cause additional ones.
Thresholds and triggers	The accumulation of disturbances causes a fundamental change in the behavior of the ecosystem	Changes in land use result in increased surface runoff that causes streams to become incised. As a result, wetlands become disconnected from the floodplain.

Cumulative effects to wetlands are expected to be negligible for the following reasons:

- Project-related wetland mitigation would compensate for effects, therefore there would be little to no effects to be combined with wetlands effects from other actions that may overlap in space and time.
- Only one project is known to overlap in space and time – the Marsh Pond Fish Passage Restoration project. While the project design work is currently underway (December 2011), it is not anticipated that there would be un-mitigated wetland effects associated with the project.
- There is substantial spatial separation (on the order of 6 or more miles) of wetlands effects associated with this project as well as the Marsh Pond Fish Passage project, making cumulative effects at the landscape scale very unlikely, and
- Wetlands throughout the Lower and Upper Suiattle watersheds as a whole are very minimally impacted by human activities. In fact, one of the main activities taking place within the watershed is road decommissioning, which restores watershed hydrology and associated wetland function.
- Lack of consistent regulations across jurisdictions is cited as resulting in wetlands effects across the landscape (Washington DOE 1975). For example: One jurisdiction may manage water flows from impervious surface, but another jurisdiction that is further upstream may not manage such flows. Or, different jurisdictions may provide differing buffer widths on the same reach of riparian wetlands. The U.S. Forest Service has jurisdiction over 94 percent of the combined Lower and Upper Suiattle watersheds, reducing the potential for cumulative effects due to different jurisdiction and management guidelines.

3.10 Riparian Reserve Environmental Effects

The following section presents environmental effects for each of the alternatives related to Riparian Reserves.

3.10.1 Alternative A (No Action)

Under Alternative A, there would be no repairs at this time and so there would be no direct effects to Riparian Reserves from project actions. However, Riparian Reserves would still be affected during future flood events. Portions of the remaining road fill materials at damaged sites are at risk to be eroded or washed away. Flood events may also recruit standing forest vegetation into the river. This process occurs naturally and is an important mechanism for recruiting large wood into the river system. The large wood subsequently forms structures within and adjacent to the channel, dissipating energy by providing roughness, allows for sediment to fall out from the water column, and alters channel morphology.

If any additional washouts eliminated access at any of the sites further deterioration would occur in the absence of road maintenance beyond the damaged site (see previous discussions above on this topic).

Hydrologic connectivity would continue to be compromised due to road segments (including temporary realignments) located directly on the banks of the River. Some portions of the existing road and bridge approach fills are located within the bankfull channel of the Suiattle River or tributary streams. The road prism in some locations acts as a barrier to surface and shallow subsurface flows, wetland connections, and movement of sediment and debris (See hydrologist Specialist Report).

Many of the culverts located in the road segments that would be obliterated under Alternatives B and C are undersized. Undersized culverts are of concern for the potential to contribute to stream scour and sediment deposition, flow over roads and erosion of road surface materials, and reduced spatial connectivity between wetlands, streams and floodplains. As previously described the existing bridge openings are not adequate for 100-year flows particularly the bridge opening at Site #7, Downey Creek. Under Alternative A, there would be no change at this time to these existing bridges and stream crossings.

3.10.2 Alternative B

Boundaries of Riparian Reserves are determined based on Riparian Reserve Standards and Guidelines (1994 ROD), with considerations such as are the streams fish bearing or non-fish bearing, intermittent, or are there wetlands. All of the repair sites contain a mix of these surface water resources, all of which would have associated riparian reserves.

All of the proposed road realignments would continue to be having road crossings within Riparian Reserves, and would have the potential for the following concerns:

- The potential capture and re-routing of shallow groundwater along cut banks
- Alteration of surface flow paths
- Channelization of shallow groundwater flows and surface flows in ditches with associated potential for erosion and sediment transport
- Removal of shade producing vegetation adjacent to streams and wetlands
- Alteration of natural geomorphic evolution of streams and overbank areas due to channelization and conveyance of flows through culverts
- Alteration of the species composition and structural diversity of plan communities in riparian areas

The above impacts occurred with the construction of the existing road, however the length of time since the original road construction has allowed for hydrologic, geomorphic and ecological processes to adapt to the altered condition. Riparian Reserve effects due to new road segments will similarly be greatest in the short term and diminish with time. The selected alignments and project design features minimize and mitigate impacts to the Riparian Reserve.

The total area of Riparian Reserve that would be affected by the project is small. The largest area of Riparian Reserves impacts are associated with Sites #3 and #4, where the reroute and road rehabilitation would affect approximately 380 acres (including Riparian Reserves of streams originating to the north and flowing through the project site to the river floodplain). The area expected to be cleared for this realignment is approximately 5 acres, with a little less than 3 acres in Riparian Reserves. While this is a very small area, the location of the new alignment crosses several streams, wetlands and associated riparian areas with potential for alterations of spatial connectivity and the physical integrity of the aquatic

system. These impacts to the Riparian Reserve are minimized with a project design that locates the road stream crossings farther upslope where the stream is narrower or in a more confined channel than the current location of Road 26 across the alluvia fan and within the Suiattle River floodplain. The stream crossings would have the appropriate sizing of culverts to convey 100-year flows plus sediment.

Table 13 presents design elements are expected to improve hydrologic, geomorphic and ecologic processes associated with the wetlands and streams at one or more of the sites.

The total area of Riparian Reserve that would be affected by the project is small. An example is the riparian reserves associated with Sites #3 and #4. The total area of riparian reserves associated with Sites #3 and #4 are approximately 380 acres (including Riparian Reserves of streams originating to the north and flowing through the project site to the river floodplain). The area expected to be cleared for this realignment is approximately 6 acres, with a little less than 3 of these acres in Riparian Reserves. While this is a very small area relative to the total area of 380 acres, the location of the new alignment crosses several streams, wetlands and associated riparian areas with potential for alterations of spatial connectivity and the physical integrity of the aquatic system. These impacts to the Riparian Reserve would be minimized under Alternative B as a result of: 1) road alignments being located upslope from alluvial fans (reducing road segments crossing riparian areas associated with the Suiattle River and its tributary streams) and 2) stream crossings would have the that are appropriately sized to convey 100-year flows plus sediment.

Table 13 presents design elements that are expected to improve hydrologic, geomorphic and ecologic processes associated with the wetlands and streams at one or more of the sites.

Table 13: Project Design Elements relative to riparian reserves

Design Element and Associated Improvement in Riparian Reserve	Site(s) where Design Element would be Applied
Setting back the road from the top of a landslide to reduce slope instability	1 and 2
Setting back the road outside of the channel migration zone	1
Moving the road away from actively eroding riverbank	1, 2, 3, 4, 5 and 6
Removal of floodplain / alluvial fan road fill and increased stream cross section for floodwater, sediment and debris conveyance	7 and 8
Replacement / upsizing culverts to allow for increased hydraulic connectivity and conveyance of 100 year flood flows plus sediment and debris	1, 2, 3, 4 and 5
Removal of old road bed material and soil decompaction to improve soil conditions and allow for suitable planting material	1, 3, 4 and 5
Wetland restoration	1, 3 and 4
Alignment selection that incorporates wetland impact avoidance, minimization, and mitigation.	
Revegetation of old road alignment	1
Retention of large trees felled for new alignment for use specifically in stream habitat improvement projects	1, 3 and 4
Removal of riprap previously constructed to protect road segments that would be obliterated; would restore riverbank physical integrity	3

3.10.3 Alternative C

Alternative C includes the proposed realignments at Sites #1 through #5, and no action at Sites #6 through #7. Alternative C would have the same effects in Riparian Reserves as those that were identified in Alternative B for Sites #1 through #5 and the same effects as Alternative A, (the No Action Alternative) for sites #6 through #8. In addition, effects common to all sites described in each of the previous alternatives would apply depending on whether action at any particular site is planned or not. These effects would not be repeated here for brevity.

Riparian Reserve Cumulative Effects

The cumulative effects analysis area for riparian reserve effects is the Suiattle River drainage from the headwaters to the confluence of the Suiattle River with the Sauk River. There are several projects that have been completed or are proposed in the same vicinity as the Suiattle road repairs. These projects are:

Past Projects

- Boundary Bridge Repair
- Suiattle Trail Repair
- Suiattle River Trail Bridge Repair

- Road 25 Closure / Storage
- Fish Passage Culvert Replacements
- Instream Treatments
- Grade Creek Roads
- Road Repairs (Roads 25, 26 and other roads)
- Forest Service Timber Harvest

Current Projects

- Road Maintenance and Repairs
- Non-Federal Timber Harvest

Future Projects

- Road 25 Riprap Removal
- Road 2540 Decommissioning
- Marsh Pond Fish Passage Restoration
- Implementation of the 2012 Suiattle ATM DN and FONSI

The Suiattle Trail and Bridge repairs are reasonably close to Site #8 (Sulphur Creek). However, any lingering effects from these two projects are not expected to cause measurable cumulative effects in conjunction with the Road 26 project.

Captain Creek culvert replacement's primary objective was fish passage improvement; but this project also improved the hydrologic function at the road crossing. The project is thirteen years old (1998) with no lingering effects on riparian function.

Cumulative effects to Riparian Reserves due to road closure/storm proofing (also known as "storage") and decommissioning are expected to be positive. The previously completed FSR 25 and Grade Creek projects have removed culverts and restored natural stream cross sections, and re-vegetation of disturbed areas associated with the projects would ultimately lead to vegetative cover supporting native plant communities. Future implementation of the FSR 2540 decommission project would result in the similar effects. Since the effects of Road 26 repairs are very small and the road storage and decommission effects are minor, no measurable negative cumulative effects are anticipated. The closure and storm proofing of roads would cumulatively contribute to maintaining and restoring the Riparian Reserve conditions in the long term.

Instream treatments were implemented from the mid 1980s to the early 1990s in this area. There is no overlap in time with these projects no cumulative riparian area effects between instream structures and the proposed Road 26 work.

Past timber sales within National Forest System lands were not located in the Suiattle River Riparian Reserve. Private land harvests that occurred within private in-holdings, and within the Suiattle River Riparian Reserve, total about 40 acres (USFS Geographic Information System data layer review). The date of harvest and revegetation on these private sections is not known exactly, however field observations confirmed revegetation of sites. Riparian conditions have over time as harvest activities in the Riparian Reserves have decreased and past activities have revegetated. The proposed project does not

contribute to a measurable reduction in riparian function and therefore there is no cumulative effect of this project with other timber management activities in the watershed.

Road maintenance includes brushing, with vegetation removal of the occasional hazard trees and therefore would have no cumulative effects with Road 26 project.

Implementation of the 2012 Suiattle ATM Decision Notice and FONSI would provide opportunities for restoration of the long-term function and process of the aquatic ecosystem by restoring natural flow patterns and improving hydrologic connectivity between streams and riparian areas.

Forest Plan Consistency - All Action Alternatives for this project would be consistent with the Forest Plan, as amended, and Standards and Guides pertinent to soil and water resources. Specifically:

- In-channel, streambank, and floodplain stability will be maintained or enhanced by moving road segments further inland from the Suiattle River and removing existing bank armoring (1990 Forest Plan p, 4-119)
- Water quality will be maintained through mandatory application of Best Management Practices. These practices will largely minimize or eliminate any potential short-term degradation of water quality due to the soil disturbing aspects of the proposal. (1990 Forest Plan p 4-126)
- Aquatic Conservation Strategy objectives will be met by: preparing road design criteria, elements and standards that govern construction and reconstruction; minimizing disruption of natural hydrologic flow paths through upsizing flood conveyance facilities (culverts); re-siting road segments upslope of alluvial fans; removing fill material from historical channels/alluvial fans; and siting realigned road segments to minimize wetland effects. (1994 Forest Plan, as Amended, Record of Decision, RF-2) (further discussion of how the project is consistent with each of the 9 Aquatic Conservation Strategy Objectives is included in the Fisheries Report)
- Potential soil disturbance would be restricted to far less than the Forest threshold of 20 percent compaction in the project area due to project actions. Any limited soil loss from surface erosion that is caused by these project activities will not result in an unacceptable reduction in soil productivity and water quality, The potential for surface erosion will be minimized by maintaining effective ground cover after cessation of any soil disturbing activity. (1994 Forest Plan, as Amended, Record of Decision, RF-5 and 1990 Forest Plan Forest Wide Standards and Guidelines for Soil Resources).

3.11 Wildlife

Wildlife species considered in this assessment are federally listed species of northern spotted owl, marbled murrelet, grizzly bear and gray wolf, and Regional Forester listed sensitive species of wolverine, bald eagle, Johnson's hairstreak butterfly, harlequin duck and Townsend's Big-eared bat (www.fs.fed.us/r6/sfpnw/issssp/). The analysis area for wildlife included the portion of the Suiattle River drainage from MP 6.0 to 23.2, critical habitat designated for both the marbled murrelet (USDI 1997) and northern spotted owl (USDI 2008), and Bear Management Units in the Suiattle River drainage.

This assessment also considered Forest Plan Management Indicator Species (MIS) of pine marten, mountain goats, black-tailed deer and elk and pileated woodpeckers. The assessment covers land birds, rare and uncommon species (terrestrial mollusks) and species of concern (riparian species such as amphibians, mollusks and bats) from the Forest Plan, as amended (USDA Forest Service, USDI BLM 1994 and Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standard and Guidelines, January 2001).

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in Conservation Northwest, et al. v. Sherman, et al., No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs' motion for partial summary judgment and finding NEPA violations in the Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement.

The survey and manage species list from the 2011 settlement Agreement was reviewed with the past survey efforts for mollusk species in the Suiattle Road 26 ERFO Repair project. No additional surveys were needed due to the documentation of all mollusk species during pre-disturbance surveys in suitable habitat, regardless of what is on the agency lists at the time of the survey. Prior to initiating pre-disturbance surveys, the Suiattle ERFO project was considered for habitat-disturbing activities (page 22 of the 2001 ROD S&Gs) that would warrant pre-disturbance surveys.

Based on review of available records of species observations, district files, a lack of habitat, or lack of habitat impacts, the following species of concern were considered, but found to not occur within or adjacent to the project area: lynx, Larch mountain salamander, Van Dyke's salamander, great gray owl, common loon. The following mollusk species: *Cryptomastix devia, Deroceras hesperium, Hemphillia glandulosa Megonphix hemphilli, and Pristiloma wascoense* were surveyed for and not found. Other mollusk species from previous survey and manage lists of old growth associates (*Prophysaon coeruleum, Hemphilia burringtoni, Hemphillia malonei, and Hemphillia pantherina)* were also surveyed for in suitable habitat within the project area and not detected.

This A-EA hereby incorporates by reference the Wildlife Specialist Report (40 CFR 1502.21). The Wildlife Specialist Report is located in the Project Record and contains the detailed data, Affected Environment, analysis, references, and technical documentation that the Wildlife Biologist relied upon to reach the conclusions in this EA.

Threatened and Endangered Species

Section 7 consultations on the Suiattle Road 26 ERFO Project were completed in both formal and informal Biological Assessments and Biological Opinions with US Fish and Wildlife Service staff in 2005, 2010, and 2011 with concurrence on the following effects calls. All action alternatives would result in *"no impacts"* to bald eagles (delisted—August 2007) and a *"no effect"* risk assessment for grizzly bear and gray wolf. The proposed action was consulted on as a "*may effect, not likely to adversely affect"* risk assessment for spotted owl and spotted owl critical habitat. The proposed action was consulted on as a short-term "*may effect, likely to adversely affect*" risk assessment for the marbled murrelet due to potential noise disturbance from road repair activities in areas adjacent to mature and old-growth forest (31 acres). The proposed action would be a "*may effect, likely to adversely affect*" risk assessment for

marbled murrelet critical habitat due to the reroute removal of approximately eight acres of forest within critical habitat. The removal of trees considered primary constituent element 2, will degrade habitat, but not impair the critical habitat unit's ability to provide for the conservation of the murrelet.

The potential disturbance has been consulted on with U.S. Fish and Wildlife Service (FWS for conservation measures to minimize the potential impacts (See wildlife mitigation and effectiveness in Chapter 2). The Biological Assessments prepared for consultation with FWS and the Biological Evaluations assessing impacts to the Regional Forester's Sensitive Species can be found in District files and Project Record at the Darrington Ranger District office.

3.11.1 Northern Spotted Owl and Spotted Owl Critical Habitat

The Suiattle River drainage has both historic spotted owl sites (surveys in the 1980s to 1990s) and historic and recent barred owl detections. Within the project area, there are no spotted owl historic sites and only barred owls were detected during 2008 and 2009 spotted owl surveys within suitable habitat along Road 26 repairs sites. There is no suitable spotted owl nesting habitat in the immediate vicinity of the damaged road section at Site #1 (MP 6.0). There are portions of mature forests adjacent to damaged Site #2 (MP 12.6), #3 (MP 13.0), #4 (MP13.4), #5 (MP 14.4), Site #6 (MP 20.8), and the bridges, Site #7 (MP 20.9) and Site #8 (MP 22.9). The nearest historic spotted owl activity centers are from surveys in the 1990s and located approximately 2 miles upslope on the south and north side of the Suiattle River.

Barred owls have been identified as a major threat in the evaluation of the status and recovery of the northern spotted owl (S.P. Courtney; J.A. Blakesley and others 2004, K. Livezey, 2008, USFWS, 2008, USDI, 2011). The numerous detections of barred owls in the drainage (4 detections along the Suiattle River in 2008 and another in 2009, P. Reed, District files) suggest potential barred owl displacement or inhibition of spotted owls, with barred owls using older forests as well as young forests. In Glacier Peak Wilderness, an area without timber harvest, spotted owls compete with barred owls. A barred owl was detected 14 miles from the Suiattle trailhead at 5000 feet elevation in 2001. (P. Reed, Darrington District Wildlife Biologist).

Spotted Owl Critical Habitat **-** The northern spotted owl's critical habitat designation in 1992 included 6.9 million acres of federal lands in Washington, Oregon, and northern California. This critical habitat designation was revised in 2008 to cover 5.3 million acres of federal lands (73 FR 47325; 47354 [Aug.13,2008]). In 2011, the FWS issued the Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). This plan continued to identify the importance of habitat for long-term survival of the spotted owl with reserved areas to be managed for spotted owl habitat. The U.S. Fish and Wildlife Service is under a court-ordered deadline to propose a revised critical habitat designation by November 2011 and to finalize it by November 2012. (http://www.fws.gov/pacific/ecoservices/endangered/recovery/NSORecoveryPlanning.htm).

The project area from MP 12.6 to MP 22.9 occurs within Northwest Washington Cascades Critical Habitat Unit (CHU) WA-2 as designated by both the 1996 Federal Register (50 FR 26256[May 24, 1996]) critical habitat (CHU WA-27) and within the 2008 critical habitat (73 Fr 47325:47354 [Aug. 13, 2008]). CHU WA-2 contains 393,483 acres, of which 181,900 acres (46 percent) is suitable or habitat capable. The CHU WA-27, specific to the Suiattle River drainage has 26,084 acres of which 61 percent is suitable nesting spotted owl habitat. Effects to designated spotted owl critical habitat would be the same under either the 1992 or 2008 rule. An update on the progress with spotted owl critical habitat designation and consultation since March 2012 is provided in Chapter 4 – Consultation and Coordination.

3.11.1.1 Alternative A—(No Action)

Northern Spotted Owl - The No Action Alternative would have little direct effects to the northern spotted owl. There would be no change in suitable habitat or changes to mature stands of roosting and foraging habitat. In the No Action alternative, administrative traffic for road and trail maintenance would continue along the length of Road 26. These activities are described in the Biological Assessment, Project Consistency Form for Road Maintenance. (USDI Fish and Wildlife Service. 2002. Biological Opinion of the Effects of Mt. Baker–Snoqualmie National Forest Program of Activities for 2003–2007. FWS Reference Number 1–3-02-F-1583. Lacey, WA).

In Washington, the early nesting season for spotted owl occurs from March 1 to July 15; late nesting occurs from July 16 to September 30. During the early nesting season for spotted owl occurs from March 1 – May 30, owls initiate nesting and incubate eggs. Adverse effects from noise disturbance during the early nesting season are of concern due to the potential to interrupt optimal nest selection, or incubation success. Since most owl activities are nocturnal, noise from daytime activities are less likely to disrupt owl feeding or nesting activities. However, it is acknowledged that disturbance to owls is still possible for road maintenance activities (chainsaws and large motorized equipment). Disturbance after July 15 is not expected to adversely affect spotted owl nesting because young birds would be capable of flight and can move out of an area where noise affects them.

Northern Spotted Owl Critical Habitat - This alternative would continue to meet spotted owl nesting habitat with 61 percent of CHU WA-27 in suitable spotted owl habitat. This alternative would also retain dispersal habitat conditions of 50 percent of the landscape with 40 percent canopy and 11-inch diameter at breast height (dbh) trees. Owls would be expected to use these older stands and the second-growth stands as they mature in the next 50 years. Little additional spotted owl nesting habitat is expected for the next 70 to 100 years in the drainage. There would be no change in the spotted owl critical habitat with Alternative A.

3.11.1.2 Alternative B - Forest Proposed Action

Direct and Indirect Effects - Repair activities were assessed for direct and indirect effects on the spotted owl resulting from noise disturbance of chainsaws and large motorized equipment, and the removal of forest stands within designated critical habitat for the proposed realignments and reroutes of Road 26.

During an interagency site visit (USFS and FWS) in October of 2009, it was confirmed that no suitable nesting habitat occurs within the proposed road realignment at MP 6.0 since this is a recently harvested unit by the Department of Natural Resources. The mature timber at repair sites of MP 12.6 and at MP13.0 to MP13.4 had no suitable spotted owl-nesting habitat. The canopy closure is low, approximately 40 to 50 percent, with no live trees or snags identified as appropriate nesting habitat. The pockets of root rot result in snags that deteriorate quickly, without the cavities associated with nest sites. While Alternative B would not directly remove suitable nesting habitat, adjacent habitat to the repair sites was evaluated for potentially impacts from noise disturbance from repair equipment and blasting, and impacts to dispersal habitat.

Alternative B would remove forest stands, with approximately eight acres of foraging and dispersal habitat becoming an open road corridor. The realigned segments from MP 12.6 to 13.8 would remove both second growth and mature forests to bypass washed-out sites. The MP 12.6 realignment (damage Sites #2 to #4) would remove approximately 1.2 acres of mature forest. The MP 12.7 to MP 13.7 realignment would remove approximately 6.4 acres of forest; with approximately 2.6 acres of this being

mature forest. Approximately eight acres of forest would be removed, with four acres of mature forest removed between MP 12.6 and MP 13.7.

The road reroute at MP 14.4 had Section 7 consultation with fish and Wildlife Service (FWS) early in 2006 for the removal of approximately one acre of old growth forest. This reroute had trees felled later in 2006 before the 2006 flood closed access on Road 26 and additional trees were removed at this site in 2010 before the Federal Highways contract was terminated. No additional tree removal is currently projected for MP 14.4.

The repairs proposed at MP 20.8, 20.9 or 22.9 would not remove spotted owl habitat and would have no effect on spotted owls. This portion of the project was determined to have no effect on spotted owls or spotted owl critical habitat. Consultation with FWS on the Suiattle Road 26 Repair was completed in 2011.

Disturbance - Alternative B would have a maximum of approximately 1150 acres of forest subject to noise from road repair, based on the disturbance threshold distances for blasting, chainsaws and large equipment in the Terrestrial Programmatic Biological Assessment (USDA Forest Service, 2009). Machinery and saw noise above 92 dBA would result in approximately 52 acres of mature forest impacted, and if no blasting occurs, only approximately 12 acres of mature and old forest would be impacted by noise disturbance. Due to the lack of spotted owl response during the two years of surveys in mature habitat, and the lack of historic spotted owl use sites in this part of the Suiattle River drainage, there is a low likelihood that nesting spotted owls would be exposed to the proposed noise disturbance from repair activities (Lower Suiattle Road Repair Biological Opinion, USDI, 2010). Conservation measures to minimize noise impacts would include the following: project work would be scheduled to avoid the early breeding season of March 1 to July 15 when possible. Rock fracturing with hydraulic equipment would be the first choice for rock excavation versus blasting at MP 12.6. If blasting was needed, it would occur between August 6 and February 28 of the project year, during the late breeding season when spotted owls are mobile and would be able to avoid work sites with loud noise.

Direct Injury - Direct injury was considered from felling of trees that might strike owls in adjacent suitable habitat or dispersing owls. Due to the lack of suitable habitat in work areas of MP 6.0 and MP 20.8 to MP 22.9, and to the lack of spotted owl detections in the road realignment sections, it is unlikely that an active nest tree would be felled, or a tree strike an active nest or roosting owl. Therefore, direct injury to spotted owls would be discountable (Lower Suiattle Road Repair Biological Opinion, USDI, 2010).

Indirect Effects - The removal of approximately four to five acres of mature forest with Alternative B represents a loss of less than 0.003 percent of the dispersal habitat potential nesting habitat in the affected forest stands and less than 0.0001 percent of the potential nesting habitat in the Suiattle LSR. The small scale and scope of the tree removal for the road repair is comparable to disturbances within the Suiattle River drainage from fire, wind events and root rot pockets. The affects of the removal of five acres of habitat was consulted on with the U.S. Fish and Wildlife Service as a *may affect, not likely to adversely* risk determination for the spotted owl critical habitat.

Spotted Owl Designated Critical Habitat - As discussed above, the proposed action is limited in scale and scope. Alternative B would result in the removal of approximately eight acres of critical habitat, with four of those acres currently dispersal habitat. The proposed action would not remove suitable nesting habitat, nor would it appreciably reduce canopy cover or average tree size within the project area.

Dispersal habitat would be maintained and the four acres of mature forest removal would not affect the functional ability of the area to support spotted recovery within its geographic range.

3.11.1.3 Alternative C

Direct and Indirect Effects - Alternative C is similar to Alternative B in regards to spotted owl noise disturbance and the acres of impacts to spotted owl foraging and roosting habitat. Alternative C would not have noise disturbance related to road repairs at MP 20.8, MP 20.9 and MP 22.9. This would be approximately 4.5 acres less noise disturbance than Alternative B. This would result in Alternative C having no appreciable difference than Alternative B for direct or indirect effects.

Spotted Owl Designated Critical Habitat - Since the eight acres of forest that would be removed is part of repair work before the road closure at the Junction of Roads 26 and 2680, there would be no difference in the effects to critical habitat in Alternative C from Alternative B.

Northern Spotted Owl Cumulative Effects

Affected area: The analysis area for spotted owl cumulative effects is the 5th field watershed, concentrating on activities within suitable habitat two miles of the road system. High elevation topography above 5,000 ft was excluded and much of the wilderness did not include projects affecting spotted owls or their potential nesting habitat. Table 14 is a list of past, present, and future projects within the above analysis area and was reviewed for those projects with the potential for cumulative effects.

Cumulative effects considerations: The Suiattle River drainage was reviewed for historic spotted owl centers, forest stand age, and past, present, and foreseeable projects (Darrington District files, P. Reed, personal communication). All spotted owl sites were within old forest (>200 years of age). Barred owl detections were within both old forests and second-growth forests.

Past actions and effects: Past timber harvests (from the 1920s to 1980s) clearcut suitable habitat, resulting in a change of suitable habitat within the Suiattle River drainage as described in the Suiattle River Watershed Analysis (USDA Forest Service 2004a). Because the proposed action alternatives would result in five acres of mature forest removal, the proposed project would not measurably add to the residual effects from those actions, and therefore, would not contribute to the cumulative effects in the drainage. The Suiattle River drainage has approximately 5400 acres of second growth that are likely to provide spotted owl dispersal habitat (50 percent of the landscape is forest stands with 40 percent canopy with an average tree diameter of 11-inch diameter at breast height (dbh) measured as four feet from the ground). There would be no measurable change in dispersal habitat at the landscape scale.

Present action and effects: Road and trail repair treatments, such as the Emergency Relief for Federally Owned Roads program (ERFO), are treatments that typically are within the road prism and do not change suitable habitat or dispersal habitat conditions (see definition of dispersal habitat above). Noise disturbance on roads for decommissioning or storage is similar to road maintenance, and is of short-term duration. Current timber sales on state land in the lower Suiattle River drainage will not reduce dispersal habitat below desired levels

Future actions and effects: There are no projects in the next five years that would result in changes to the old forests that meet the definition of northern spotted owl habitat. There are no known timber sales of old-growth forests on Federal, State or private timberland within the Suiattle River drainage. There are no currently known proposals for changes in dispersal habitat between MP 6.0 (Site #1) and adjoining LSRs on State or private land.

The past and foreseeable future forest management supports forest stand conditions (SEI report 2004) described to maintain old forests habitat and meet dispersal habitat in the second-growth forests. No planned projects would change old-growth forests with suitable nesting habitat. Second growth stands within the drainage would continue to mature in the next 40 to 60 years, providing additional habitat (foraging, roosting, and dispersal habitat). No additional nesting habitat is expected for 100 to 175 years. Seventy-year stands will not provide nesting habitat for another 80 to 100 years.

Since the designation of the spotted owl as an endangered species, there has been an increasing trend in spotted owl habitat maturation within the cumulative effects analysis area and within the Forest Service Pacific Northwest Region. While there have been some road repairs that have removed suitable habitat components, there has been an increase in the number of forest acres within the Suiattle River drainage moving structurally toward future nesting habitat. Habitat quality of designated conservation areas (within potentially suitable habitat zones) has also been increasing as previously harvested stands mature. The cumulative effects of the projects within the analysis area are contributors toward desired habitat conditions for the northern spotted owl.

3.11.2 Marbled Murrelet and Murrelet Critical Habitat

There have been no murrelet surveys in the Suiattle River drainage in the last ten years, and there is little historical detection of murrelets in the Suiattle River drainage (with only three sites being actively surveyed in the 1990s). The drainage provides suitable nesting habitat, but the project area is located approximately 40 to 50 miles inland from saltwater. The greater the distance from saltwater to potential nesting habitat may be a factor in the successful recruitment of murrelets to the population. Fledgling murrelets fly from the nest site to salt water in one flight so longer distances to salt water are likely to have greater predation factors and fatigue for the young.

The murrelet analysis area was the immediate area (less than mile) around the damaged road locations in conjunction with murrelet critical habitat designation within the Suiattle River drainage. "All records of nests, eggs, eggshell fragments and downy chicks in Washington have been associated with old-growth forests." General Technical Report PSW-GTR-152 1995, p. 170.

While much of the Suiattle River drainage is older forest, the drainage has had an active fire history as reported in the Suiattle watershed Analysis (USDA Forest Service, 2004 A). Fires in the 1800s to 1900s burned much of the lower elevation areas within the 40-50 miles of saltwater. The lower portion of the drainage has mature and old forest of 100 to 200 years of with residual older trees. The Suiattle drainage is also heavily impacted by root rot pockets in the Douglas-fir stands, resulting in more open canopies of the residual stands. These conditions are less favorable for meeting desired murrelet nesting habitat.

Marbled Murrelet Critical Habitat: The Suiattle River drainage includes critical marbled murrelet habitat (WA-09-e), described in the Federal Register/Vol. 61:102 as lands concurrent with Late Successional Reserve (LSR) #115. While LSR #115 does not include the Wild and Scenic River Corridor, the maps of critical habitat in the Federal Register do include this section of the Suiattle River drainage. The Fish and Wildlife Service attributes 30 percent of the CHU WA-09-e as having suitable murrelet nesting habitat, or 14,853 acres of the 48,824 acres in the CHU, with 8,235 acres of recruitment habitat (Lower Suiattle Road Repair Biological Opinion, USDI, 2010).

3.11.2.1 Alternative A—(No Action)

Direct and Indirect Effects - Implementing the No Action Alternative would have little direct effects on marbled murrelets or critical habitat. There are five Class 4 marbled murrelet detections (fly-overs and

vocalizations) in the Suiattle River drainage (USDA 2004). Detections within the Forest boundary in the lower watershed occurred from the Big Creek area up to Conrad Creek (Forest Service files). This low number of detections is likely influenced by limited survey efforts due to few proposed projects that would remove suitable nesting habitat since the listing of the murrelet in 1992. These Suiattle River murrelet detection sites range from approximately 39 to 42 miles from saltwater. Road maintenance and repair would continue to have potential noise disturbance during the breeding season, as described in the Biological Assessment, Project Consistency Form for Road Maintenance (USDI Fish and Wildlife Service. 2002. Biological Opinion of the Effects of Mt. Baker–Snoqualmie National Forest Program of Activities for 2003–2007. FWS Reference Number 1–3-02-F-1583. Lacey, WA).

Murrelet Critical Habitat - There would be no change in critical habitat. The residual older forest and adjacent areas would retain potential murrelet nesting platforms. The second-growth stands will continue to grow in the next 50 to 100 years, contributing to canopy height adjacent to suitable murrelet habitat.

3.11.2.2 Alternative B

Direct and indirect effects - All project sites are within Marbled Murrelet Zone 1 (Puget Sound in northwest Washington), with project sites ranging from approximately 40 miles from saltwater at MP 6.0 to 52 miles from saltwater at MP 22.9. The proposed action was assessed for direct effects of habitat degradation from loss of trees and noise disturbance from heavy equipment, chainsaw use and potential blasting. Indirect effects were assessed for the loss of approximately eight acres of forest within critical habitat.

There is no suitable murrelet-nesting habitat in the immediate vicinity of the site at MP 6.0, Site #1. Of the remaining sites, only the portion of the road repairs associated with MP 12.5 and MP 13.4 contain mature trees to be removed. The trees at MP 14.4 were felled in 2006 and 2010, so no additional tree removal at that site is anticipated. Tree felling at MP 14.4 was conducted as per the conditions in the Section 7 consultation with FWS in the 2006 and 2009 Biological Opinions. Murrelet occupancy within the new road alignment is not expected due to the stands within this area do not support suitable nesting platforms. (During an October 2009 field visit attended by staff from both the Fish and Wildlife Service (FWS) and Forest Service, it was verified that the trees within the proposed road alignment did not have suitable nesting platforms.) The road realignment sites are characterized as either as within second growth forest or within mature conifer stands fragmented by multiple root-rot pockets, low canopy cover (40 to 60 percent) and little overhead or side cover of larger branches.

There would be no direct effects of mortality to nesting murrelets from felling of trees, but there is potential for exposure of murrelets to noise disturbance in adjacent suitable habitat (Lower Suiattle Road Repair Biological Opinion, USDI, Lacey, WA 2010). Noise exposure is expected from machinery, chainsaws and potential blasting. Machinery and saw noise above 92 dBA would result in approximately 52 acres of forest impacted, with 31 acres mature forest of those acres suitable murrelet nesting habitat. The proposed blasting procedure would result in an area of about 3.6 acres exposed to noise levels of 92dBA. Noise disturbance within suitable nesting habitat may result in flushing of adults, or delayed feedings. Conservation measures to reduce exposure to construction noise include daily work windows (two hours after sunrise to two hours before sunset), and blasting to occur between August 6th to February 28) outside of the early nesting season.

Indirect effects from Alternative B include the removal of approximately eight acres of forest, both second growth and mature forest. While the trees removed do not have suitable nesting habitat, the possibility exists that tree removal will increase edge effects in adjacent stands resulting in greater risk of

nest predation. Due to the lack of human activity centers in proximity of the proposed repair and the presence of an existing large edge from the adjacent Suiattle River, an increase in predator effectiveness along the road edge would not be expected from the proposed action at MP 12.6 to 13.4.

Alternative B would have limited direct and indirect effects on murrelets as described in the FWS Biological Opinion (Lower Suiattle Road Repair Biological Opinion, USDI, 2010). The proposed action would not measurably affect reproductive success of the marbled murrelet for the following reasons:

There will be no lethal effects to murrelets and chicks during the nesting season, or with the exposure of construction noise due to lack of habit and to conservation measures for the areas with exposure to suitable nesting habitat.

Less than eight acres of forest will be removed (counting both second growth and mature forests) and no suitable nest trees are identified within these acres.

Conservation measures on work windows will minimize noise impacts.

During the late season, duration of exposure from blasting or other noise will be short in terms of duration.

The proposed action would not measurably affect murrelet number or distribution within Zone 1 – Puget Sound in northwest Washington for the following reasons:

The proposed action will not result in direct injury to murrelet adults, chicks or eggs.

The small geographical scope of the action area, the low murrelet density within the Zone and the distance of the action area from salt water indicates few murrelets will be exposed to or affected by the proposed action.

Murrelet critical habitat **–** The proposed action removes approximately eight acres of forest, with approximately four of those acres considered primary constituent elements (PCE-2). These PCE-2 acres are forest with canopy height of at least one-half of a site-potential tree within 0.5 mile of individual trees with potential nest platforms. The loss of adjacent cover trees area will incrementally degrade the action area, but the amount of habitat loss and degradation is small (<.09 percent of the 8,235 acres of recruitment habitat in the 48,824 acre CHU). Given the baseline condition of the action areas and CHU, this removal will not measurably reduce or impair the ability of the CHU to provide for the conservation of the murrelet.

3.11.2.3 Alternative C

Alternative C is similar to Alternative B with the repair of the first five sites to MP 14.4, with the same consequences of noise disturbance and tree removal from the road repairs and reroutes. Alternative C would have less noise disturbance with no large equipment repairs at MP 20.8, MP 20.9 and MP 22.9. The repairs at these three sites would be point noise sources for large equipment and chainsaws (92 dBA at 135 ft. from the source). Since the sites have no suitable habitat on the riverside of the repair sites, there would be a total of less than two acres of noise disturbance in suitable murrelet habitat for Alternative C with no repairs at MP 20.8, MP 20.9 and MP 22.9. Due to the very slight difference in noise disturbance acres of Alternative C to Alternative B and given that these repair sites are 48 to 50 miles from saltwater, at the farther edge of Zone 2, there is no measurable difference in Alternative C environmental consequences from Alternative B.

Marbled Murrelet and Critical Habitat Cumulative Effects

Cumulative effects analysis area: The cumulative effects analysis area for the marbled murrelet was the project area in conjunction with Critical Habitat Area WA-09-e (Federal Register, Vol61, No. 102)

Past actions and effects: Past timber harvest from the 1920s to 1980s, that clearcut suitable habitat has resulted in a change of suitable habitat within the Suiattle River drainage and is described in the Suiattle Watershed Analysis (USDA Forest Service 2004). Because the project would not change stand year-of-origin for past harvest, none of the action alternatives associated with the proposed project were found to measurably add to the residual effects from those actions, or contribute to the cumulative effects in the analysis area.

Present action and effects: Road maintenance and road treatments in the analysis area would not result in a change in murrelet habitat, and have no cumulative effects on marbled murrelets or critical habitat.

Future actions and effects: No projects are planned in old-growth forests with suitable nesting habitat, and there would be no change or effects to murrelet critical habitat.

Within the 6th field and the Forest Service Pacific Northwest Region, the trend in murrelet habitat since designation as an endangered species, has been an increased in the maturity of forest acres toward future nesting habitat. Habitat quality within designated areas (within potentially suitable habitat zones) has been increasing as previously harvested stands mature. The cumulative effects for marbled murrelets, and critical habitat units within the analysis area, would be a minor shift in improved quality of future nesting habitat. This is based on the limited amount of riparian areas and the LSR area that has been thinned or projected to be thinned, so there are limited contributions to habitat enhancements in murrelet critical habitat.

3.11.3 Gray Wolf

While there are historic wolf detections along the Pacific Crest, there have been no recent detections of wolves in the Suiattle River drainage. Howling surveys conducted during the 1990s within the Glacier Peak Wilderness failed to elicit any responses from wolves. Given the low density of deer and elk (the major prey items for the wolf), the Suiattle River drainage does not currently provide suitable habitat for resident wolves. All alternatives would result in no change in the forage opportunities for deer and elk and therefore no change to the prey base for gray wolf. There also would be no change in denning habitat for gray wolf. Potential impacts from the project in relation to human interactions or disturbance to large carnivores are discussed in the following section on grizzly bear.

3.11.4 Grizzly Bear

While few sightings, historic or present, have been reported for this area, the project area is within a greater analysis area of the North Cascades Grizzly Bear Recovery Zone, and two Grizzly Bear Management Units (BMUs): Prairie Mountain BMU #11, and Green Mtn. BMU #12. The Suiattle BMU #9 is an adjacent BMU on the south side of the Suiattle River. (Figure 2-12 Grizzly Bear Management Units in the Suiattle Watershed – page 77, USDA Forest Service, 2004a). Core habitat (0.3 mile from open roads or high use trails) is considered important for bears use of habitat with areas away from roads and associated human activity less likely to result in bears avoidance of habitat or negative encounters with people, including illegal take (USDI 1997b). In this assessment, changes in core habitat were reviewed for late core habitat when all roads and trails are assumed seasonally open or in use by the public. Core habitat values are less in late season than early season, when many roads and trails are inaccessible due to snow. Effects to core habitat were assessed by changes in open roads or trails and the

corresponding impacts to acres and percent of core habitat by BMU (Wildlife Specialist Report in project record). While open roads are noted as influencing bear use of the area for foraging, gravel roads are reported to have limited influence on grizzly bear movement, due to the lower speed of vehicles and fewer vehicles per day on these road systems (Waller and Servheen C, 2005). The threshold for roads becoming barriers to grizzly bear movements is reported to be 2,400 vehicles per day or about 100 vehicles per hour (Waller and Servheen, 2005). The maximum expected motor vehicle use of the roads in the area would be considerably less than this threshold, based on the area's popular trailhead records.

Connectivity of the core habitat within the Suiattle River drainage is high with large portions of the BMUs in wilderness with few trails that could influence bear distribution across the landscape. The Prairie BMU has less than 50 percent of the BMU in core habitat with gravel roads as the primary road system within this BMU. There would be no change in core acres for the Prairie BMU with any of the alternatives.

There would be no change in vegetation status with any of the alternatives, so there would be no change in bear forage within the area. Limited forage for ungulates would also limit deer and elk numbers, and limit major prey availability for wolves.

3.11.4.1 Alternative A—(No Action)

The No Action alternative would result in no change to the core habitat within the bear management units of the Suiattle. Core area (1/3 mile from open road and high-use trails) is to be no less than 70 percent of a BMU on federal lands. Both the Green Mt. BMU (92 percent early core habitat and 83 percent late core habitat) and the Suiattle BMU (92 percent early core habitat and 75 percent late core habitat) exceed the desired 70 percent core habitat for interior BMUs.

Road 26 would remain closed at MP 12.6 to motorized vehicles, with limited administrative traffic to MP 20.9. There would be no change in core habitat areas due to the foot traffic, bicycles, and stock would continue to use the closed road from MP 12.6 to the Suiattle River trailhead. While traffic would be less than when the road was open to motorized access, the administrative traffic and foot traffic on Road 26 is sufficient to designate the route as remaining as a high-use corridor, with core acres continuing to be counted 1/3 mile from the road. Road 2680 would also continue to have limited road maintenance activities and would be considered an open road with core acres 1/3 mile from the road.

If grizzlies should occupy the area, the no action alternative would provide additional area with fewer vehicles and fewer visitors, leading to higher potential use of habitat near roads by grizzly bears.

3.11.4.2 Alternative B

There would be no change in grizzly bear core habitat acres with Alternative B, with the restoration of vehicle access on 16.5 miles of road to the terminus of Road 26 and Road 2680, the Green Mountain trailhead. The motorized public access would be restored on approximately 10.5 miles of Road 26, and six miles of Road 2680 which currently have administrative vehicle use and foot traffic. With the return of public motorized use, there would likely be avoidance of the open road corridors by bears for travel and foraging, especially during daylight hours. Visitors, including hunters, would have greater access to the upper Suiattle drainage and there would be the potential for an increase in grizzly bear interaction with humans if grizzly bears should occupy the area.

There would be a short-term (one to two seasons) increase in human access during roadwork within the project area. Impacts to wildlife would include a displacement of use of the area during the work, typically less than one season. As the motorized road use resumes, wildlife are likely to adjust their use to

nocturnal periods of less human use, or adjust travel paths to areas less used for species sensitive to human uses.

3.11.4.3 Alternative C

Alternative C is similar to Alternative B, but has fewer miles of road retained as open to vehicle traffic. Motorized access would continue to be by foot, bicycle or stock on an additional four miles from the junction of Road 26 and Road 2680 to the terminus of Road 26. Motorized access would be restored on the six miles of Road 2680. There would be no increase in core habitat in Alternative C due to the active use of the closed road by foot traffic.

Grizzly Bear

Cumulative effects analysis area: For this project, the grizzly bear cumulative effects area review uses the analysis area of the project area with the area encompassed by BMU #11, BMU #12 and BMU #9. Appendix C was reviewed for projects within the vicinity that had the potential for cumulative effects. The timeline of effects would be the inclusion of other past, present or reasonably foreseeable project that have or could result in a net change in core habitat with the Suiattle BMUs.

Past actions and effects: The 1993 Decision Notice and FONSI for the Suiattle Road #25 repairs closed the south side of the Suiattle, Road #25 at Circle Cr (See Table 14). This provided 2400 acres of core habitat by closing approximately seven miles of road to motorized access. (1993 Southside Suiattle Road Environmental Assessment – District files)

Current actions and effects: All current projects assessed (Table 14) would result in no net change in bear management core acres.

Future actions and effects: There are no additional future actions outside of the implementation of the Suiattle Access Travel Management (ATM) plan in the 5th field watershed of the Suiattle River drainage that would result in a change in core habitat for grizzly bears. Cumulatively, there would be an increase in core acres from additional road closures. While active decommissioning of the roads is dependent on future funding, the 2012 Suiattle ATM DN and FONSI provide direction for a smaller managed road system in the Suiattle River drainage.

Regional Forester's Sensitive Species

The Forest's terrestrial wildlife species from the Regional Forester's Sensitive Species list, those species not currently federally listed or proposed under the Endangered Species Act are: Larch Mountain salamander, Van Dyke's salamander, common loon, peregrine falcon, bald eagle Townsend's big-eared bat, great gray owl, Johnson's hairstreak butterfly, harlequin duck and wolverine.

Habitat for loon (large lakes), great gray owl (open forest/meadows) and habitat for Larch Mountain and Van Dyke's salamanders (range south of Highway 2) is not present within or near the proposed project area or would not be influenced by the proposed action. There would be no impacts to these species with any of the alternatives. These species will not be discussed further in this document.

Peregrine falcon is associated with cliff nesting areas with nearby sufficient prey base. None of the alternatives would result in a change in suitable habitat for the peregrine and this species will not be discussed further in this document.

Townsend's big-eared bat is associated with caves, buildings, and large bridge structures. There has been use of a bridge within the lower Suiattle River drainage by Townsend's big-eared bat so use of the area by this species has been documented (Darrington District files). Bridges within the project area were

searched for bat sign with no detections of bat use. None of the alternatives would result in a change in suitable habitat for the Townsend's big-eared bat and this species will not be discussed further in this document

Johnson's hairstreak butterfly is associated with mistletoe of the western hemlock that the larva uses as a forage source. Road treatments would have limited impact to mistletoe trees from the proposed project and therefore none of the alternatives would result in an appreciable change in suitable habitat for the Johnson's hairstreak butterfly and this species will not be discussed further in this document.

Harlequin ducks use inland streams for foraging and nesting and have been documented in the Suiattle River drainage. Breeding Harlequin ducks are associated with rapid water, foraging for aquatic insects such as caddisflies, and nesting in stream side areas with cover of large wood. None of the alternatives would directly impact the harlequin duck or its habitat. Due to the mobility of the harlequin, any activity associated with the action alternatives would be temporary displacement of a foraging duck and would not be within areas considered suitable nesting habitat. The glacial fed Suiattle River would mask any sediment delivery from proposed activities and sediment would be diluted by the volume of the river flow. Therefore, none of the alternatives result in sediment impacts to harlequin prey items or result in a change of suitable foraging or nesting habitat. This species will not be discussed further in the document.

3.11.5 Bald Eagle

The bald eagle was delisted in August of 2009. There are no known or historic bald eagle nest sites within the Suiattle River drainage. Wintering bald eagles forage along the Suiattle River and tributaries, including wetlands adjacent to the Boundary Bridge that are on tribal and private lands. Known night roosts are on National Forest and Bureau of Land Management lands in the vicinity of Lower All Creek, Conrad Creek and along the Suiattle River. There are three known or historic bald eagle night roosts within the project analysis area, between Mile Post nine and Mile Post 12 of the Suiattle Road 26, and Mile Post 0.0 and three of Road 25. All Creek wetlands support Coho runs which in turn support winter bald eagle foraging. Roads in this area are typically closed by snow during highest eagle use (December to February). The proposed road projects would not affect bald eagle night roosts or foraging areas, and work would be outside of the winter foraging period. This species will not be further discussed in this document.

3.11.6 Wolverine

Wolverine is a rare carnivore, widespread in geographic distribution, but present in low-densities. Given the wide-ranging characteristics of this species, it may be present within the analysis area of the 6th field watershed. The primary mortality factor for wolverine is by trapping; consequently large refugia (with limited road access) may be one of the best means for ensuring persistence of wolverine populations. The wolverine is generally described as opportunistic in feeding, and activities that increase availability of general food supply would affect wolverine positively, whereas those activities that reduce prey populations would affect wolverine negatively. The lack of extensive knowledge about wolverine habitat and ecology, leads to the use of conservation strategies for other large carnivores to provide for wolverine (Ruggiero and others 1994).

Effects Common to All Alternatives

Wolverines are generally found in upper elevations and remote areas with little human activity, but have also been recorded as dispersing or moving through lower-elevation areas. Wolverine may benefit from additional areas with few vehicles and minimal human access (mortality factors) and abundant prey. The

benefits of core habitat discussed for grizzly bear would also apply for wolverine with all action alternatives maintaining core habitat (see grizzly bear discussion above) or security habitat with less human activity.

Wolverine Cumulative Effects

For this project, the national forest lands within Suiattle River drainage were used as the wolverine analysis area of cumulative effects.

Past actions and effects: The 1993 EA for the Suiattle Road closed the south side of the Suiattle Road #25 at Circle Cr (See Table 14). This provided 2400 acres of core habitat by closing approximately seven miles of road to motorized access. (1993 Southside Suiattle Road Environmental Assessment – District files)

Current actions and effects: All current projects assessed (Table 14) would result in no net change in bear (wolverine) management core acres.

Future actions and effects: There are no additional future actions outside of the implementation of the ATM plan in the 5th field watershed of the Suiattle River drainage that would result in a change in core habitat for grizzly bears (and wolverine). Cumulatively, there would be an increase in BMU core acres from implementing the Suiattle ATM DN and FONSI.

Cumulatively, there would be a slight increase in the core acres where there is less potential of human disturbance for wolverine.

3.11.7 Management Indicator Species (MIS)

Habitat for the MBS Forest "indicator" species of mountain goats, pileated woodpecker, pine marten and black-tail deer, are expected to be maintained with implementation of any of the alternatives. The scale and scope of any of the action alternatives, up to eight acres of forest stand removal is a minor impact on both the site specific scale (within the area of potential effects of the project) and on a landscape scale. This is due to the high amount of the Suiattle River drainage in wilderness (70 percent), Late Successional Reserve and Congressionally designated Wild and Scenic River acres, resulting in allocation of greater than 90 percentage of the Suiattle River drainage dedicated to minimized human development (Suiattle Watershed Analysis, USDA, 2004). The environmental effects of all alternatives, from no action to repair of Road 26, were assessed for MBS Forest management indicator species of mountain goat, pine marten, pileated woodpeckers, and black-tailed deer with a more detailed assessment provided in the Wildlife Specialist Report in the Project Record.

There would be no measurable change in habitat with any of the alternatives for the MBS Forest Management Indicator Species. The indirect effect for action alternatives would be differences in hunting access that would be limited to a minor portion of the drainage, and would not result in an effect on the populations or viability of the species that are hunted or trapped. There is no current open season in the Suiattle for mountain goat hunting, pine marten trapping is focused on upper elevation areas with minimal roads, and black-tail deer hunting is limited by early seral forage. These species will not be discussed further in this document.

This report incorporates by reference the MBS Terrestrial MIS Assessment (40 CFR 1502.21). This assessment, which is located in the Project Record, contains detailed assessment of the species and habitat on a landscape scale (the Forest). The assessment includes the analysis, references, and technical

documentation that the Wildlife Biologist relied upon to reach the conclusions for MIS in this project assessment.

3.11.8 Other Species of Concern

Neotropical Birds or Land Birds

The MBS is located at the northern end of the Southern Pacific Rainforests physiographic area. The only priority habitat of this physiographic area that occurs on the MBS is coniferous forest. There are 22 priority land bird species identified for this habitat, and all but five (mountain quail, Allen's hummingbird, Lewis' woodpecker, white-headed woodpecker, and Cassin's vireo) occur on the Forest. Twelve of these are Neotropical migrants.

The Monitoring Avian Productivity and Survivorship (MAPS) stations on the MBS from 1992 through 2012 have provided indices of adult bird population sizes and post-fledgling productivity, with trends summarized for population and productivity. Trends of all species pooled for the MBS showed increase, but the increases were non-significant. Within the Pacific Northwest Region, the data suggests that population sizes and productivity continues to remain at low levels, with concern for productivity declines in the late 1990s (P. Pyle and others, 2000). A more detailed assessment of land birds is provided in the Wildlife Specialist Report in the project record.

All Alternatives

All Alternatives would retain a diversity of habitat within the coniferous forests with big-leaf maple, Pacific yew, cottonwood, vine maple, and alder patches providing variety in stand composition. Action alternatives would result in changes to eight acres of forested habitat. The scale and scope of this change is within the scope of disturbances from wind, fire and other natural disturbances (USDA Forest Service, 2004) and is a minor impact on both the site specific scale (within the area of potential effects of the project) and on a landscape scale. There would be no measurable change in habitat with any of the alternatives for neotropical land birds and there would be no effect on the population viability of land birds from any of the alternatives

Forest Plan Consistency

All Alternatives are consistent with the Forest Plan, as amended.

- The alternatives would provide varying degrees of impacts to wildlife habitat, but the road system repairs and road maintenance levels in all alternatives would meet wildlife habitat standards and guidelines of the Forest Plan.
- There is no difference in the two action alternatives in the amount of mature and second growth forest that would be removed for the road reroutes since both alternative include the reroutes from MP 6.0 to MP14.4. The EA describes the scale and scope of the impacts to mature habitat as limited (eight acres) and that all alternatives would support spotted owl foraging and roosting habitat. All alternatives provide for retention of more than 80% of the federal lands in mature and old forest conditions.
- All action alternatives will maintain critical habitat identified for recovery of spotted owl and marbled murrelet.
- The EA describes the difference in open and closed roads to wildlife use, with motorized traffic on all but four miles of the road system in Alternative C vs. Alternative B, which would repair Road 26 to the terminus. Road 26 would continue to have foot traffic on portions of the road in

Alternative A (No Action) and Alternative C (last four miles) and motorized traffic on in Alternative B resulting in Road 26 designated as a high-use road for grizzly bear habitat assessment and no difference to core habitat.

- The EA also describes the alternatives' potential impacts to for Forest Management Indicators species, survey and manage species and other wildlife species of concern, with all alternatives meeting Forest Plan standards and guidelines for wildlife habitat.
- The Suiattle Road 26 ERFO Repair Project is consistent with the Darrington District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2001 ROD), as modified by the 2011 Settlement Agreement.

Table 14: Other past, present, and reasonably foreseeable activities influencing wildlife habitat.

Project/Activity	Extent/Description	Comments
Past		
Suiattle Road 25 Treatment – 1992 DN/FONSI	Road 25 treated east of Circle Creek for storage and closure	Increase of grizzly bear core habitat from Rd 25 closure not changed by Rd 26 treatments
Boundary Bridge	Replace Rd 25 bridge across Suiattle River	No habitat removal – all work completed in existing road prism 2009
Suiattle Trail Flood Repair	Relocate trail between MP 1.5 and MP 3.	Completed in 2006. Additional work between MP 3 and MP 7 in 2010 and 2011
PCT Flood Repairs	Relocate PCT between Vista Creek and Miners Creek. 3.25 miles of new trail and new bridge over Suiattle.	Completed in 2011. No habitat removal.
Suiattle River Bridge Replacement/Milk Creek Trail	Replace bridge across Suiattle River on Milk Creek Trail 790	Contract awarded in 2006. Project cancelled 2007 due to flood damage to site. No habitat removal
Forest Service timber harvest	7810 total acres – 2450 acres harvested since 1980, 5360 acres harvested from 1930s through 1970s, none on NFS land since 1995.	The proposed project would not add to residual effects from past actions to spotted owl and marbled murrelet habitat.
Private land activities	12,979 acres of private land	Primary activity is timber harvest within second growth stands. Assumption that little suitable owl and murrelet nesting, owl foraging, and eagle roosting habitat is present.
Present		
Road maintenance	Blading, brushing, grading and culvert replacements	No habitat removal
Future		
South –side Suiattle Road closures	10 miles of road closures	Pending future funding for implementation of the 2012 Suiattle ATM DN and FONSI. Additional grizzly bear core additions.

3.12 Botany Affected Environment

The vegetation around MP 6.0, Site #1 is on State land in a harvested second –growth forest stand. MP 12.6 to MP 13.4, the repair route is partly on Forest Service Road 2670 and partly through a second –

growth plantation and old forest. The forest is mixed conifer and hardwoods, with remnant large (40 inches dbh) Douglas-fir and western hemlock scattered through the project area. Understory species include huckleberries, sword fern, Oregon grape, and other common species. The noxious weed herb Robert was seen extensively along the Suiattle River Road from MP 12.6 to MP 13.4 (Sites #2 to #4).

The repair at MP 14.4 (Site #5) is within mature and old growth Douglas-fir and grand fir, with smaller western hemlock and cedar in the understory. Many of the trees are quite large, more than 48 inches diameter. There is a small stream approximately half way along the proposed road re-route. West of the stream the canopy is closed and the understory is very depauperate, in terms of both vascular and non-vascular flora. East of the stream the canopy opens up more and the understory is quite brushy. Understory vegetation consists primarily of sword fern, stinging nettles, and stair-step moss. The noxious weed herb Robert was found along the Huckleberry Mountain Trail, and in the understory east of the stream. It is quite extensive there, covering an estimated three acres, as of 2004.

Level 5 (intuitive controlled) botanical surveys were conducted on Sites #2 to #6. A complete species list can be found in the botany files at the Darrington Ranger Station. The area surveyed included the proposed road re-route, as well as the proposed Huckleberry Mountain Trail segment, which would connect the trailhead parking area with the existing trail. No species of concern were found during that survey.

Sites #6 to #8 did not receive botanical surveys due to the proposed repairs being located in the road prism or the adjacent existing road cutbank. The road prism is not considered suitable habitat for Sensitive or other rare and uncommon species. The area of potential effects to vegetation at MP 20.8 and 20.9 was reviewed in a field trip on May 3, 2011 with updated repair plans for those sites. 2011 field notes concurred with the previous 2008 report. Sites #6 to #8 are confined to the area which are not considered suitable habitat.

Survey and Manage Species

On the Mt. Baker-Snoqualmie National Forest, internal Botany Program procedures direct botanists, to the extent possible, to document all species (vascular plants, bryophytes, lichens, and fungi) during pre-disturbance surveys, regardless of what is on the agency lists at the time of the survey. Therefore, Site #5 does not require additional botanical field surveys and Sites#2 to #4 were survey with 2001 list of species.

No lichens, bryophytes, or vascular plant species on the December 2003 Survey and Manage species list were found during the 2004 surveys at Site #5. A review of the Botany database shows a known site of the Survey and Manage lichen *Nephroma bellum* near the Site #8, but it is several hundred feet away from the road. There were no known sites at Site #7, or Sites #2 to #4.

There is one species of fungus on the December 2003 Survey and Manage list that it is possible to survey for (i.e., *Bridgeoporous nobilissimus*). Site #5 was surveyed for this species, and it was not found. The remaining 188 species of fungi on the December 2003 list are not practical to survey for. The botany database shows no known sites of any of those other species at any of the proposed project sites.

A botanical pre-field review was completed in 2004 and repeated on January 25, 2006 to ensure that no species on the December 2003 Survey and Manage species list would be impacted by project activities. Botanical surveys for sites #2 to #4 were completed after the 2006 floods in August of 2008. Sites #6 and #7 were visited in May, 2011 and no additional surveys were identified as needed.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in Conservation Northwest, et al. v. Sherman, et al., No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs'

motion for partial summary judgment and finding NEPA violations in the Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement.

The survey and manage species list from the 2011 settlement Agreement was reviewed with the past survey efforts for the botanical species in the Suiattle Road 26 ERFO Repair project. No additional surveys were needed due to the documentation of all species (vascular plants, bryophytes, lichens, and fungi) during pre-disturbance surveys, regardless of what is on the agency lists at the time of the survey.

The Suiattle Road 26 ERFO Repair Project is consistent with the Darrington District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2001 ROD), as modified by the 2011 Settlement Agreement.

Noxious Weeds Management

The 1999 Executive Order on invasive species (direction found in Forest Service Manual 2080) the National and Regional strategies for noxious weed management, and the October 2005 Region Six Record of Decision for Preventing and Managing Invasive Plants identify prevention as the preferred strategy for managing competing and unwanted vegetation. In addition to treatment of known infestations, measures intended to prevent further infestations and weed spread would be incorporated into the construction contract. These measures come from the Forest Plan, Forest-wide Standards and Guidelines, Best Management Practices for noxious weeds and the 2005 ROD for Preventing and Managing Invasive Plants.

Botany Environmental Consequences

All Alternatives

Because no Sensitive or Survey and Manage species were found during the surveys at Site #2 to Site #5, there would be No Impact to individuals, populations, or species under any of the Alternatives. Because suitable habitat is not present at Site #1, #6, #7, and #8, Sensitive or Survey and Manage species are not expected and there would be *No Impact* to individuals, populations, or species under any of the Alternatives. There are no known Survey and Manage Species sites to manage.

The chances of weed spread are considered slightly higher under Alternative B and C because of the additional ground disturbance that would be needed with the repair reroutes. Weed spread would occur at lower levels under any of the Alternatives because the weed involved (i.e. herb Robert) does well in shade and does not require disturbance to spread. The mitigation measures specified are expected to minimize the spread of the herb Robert under any Alternative, but are designed primarily to respond to the Alternative B and C scenarios. Having equipment work from uninfested to infested areas would prevent seeds and plants from being physically relocated onto the uninfested ground. Monitoring the material hauled off-site would allow early treatment of any germinants by hand pulling.

Botany Cumulative Effects

There would be no cumulative effects to Sensitive or Survey and Manage species because none are present. In considering cumulative effects on noxious weeds, the area analyzed was the Suiattle River Road from Highway 530 to its end, and its spurs. This is because roads and the vehicles using them tend to be good vectors for weed spread (Lonsdale and Lane, 1994; Sheley and Petroff, 1999; Tyser and Worley, 1992).

Noxious weeds are present in the project area, as well as in other spots along the Suiattle River Road. Herb Robert is found in scattered locations, and a small population of tansy ragwort exists along the Suiattle Road east of Tenas Creek. The tansy has been hand-pulled for the last six years. Other populations of tansy ragwort exist along the Grade Creek Road, and have also been hand-pulled for seven years. These populations are not expected to contribute to weed spread within the project sites because they are controlled annually, prior to seed dispersal.

The Green Mountain horse pasture, east of the project area, contains a large infestation of Canada thistle with lesser amounts of sulphur cinquefoil and common tansy. In 2005 and 2006, these infestations were sprayed with herbicide, and the population had decreased by 50 percent. Since 2006, there has been limited access and no visits so their status is unknown. It is likely the populations are increasing without treatments and may be spreading thistle seed into adjacent areas.

Weed control activities in this drainage would overlap in time with this project. Cumulatively, weed spread is not expected to increase significantly over and beyond what would be expected with No Action. Weed control efforts along the Suiattle River Road are on-going, and establishing competitive and desirable plants along the roadside (specified seed mix) helps prevent establishment of new weed infestations (Sheley and Petroff, 1999; Losensky 1989). Mitigation measures also include the use of weed free materials and equipment would be weed-free.

Forest Plan Consistency

All Alternatives would be consistent with the Forest Plan, as amended. .In Alternatives B and C, the road repair described and analyzed and in this assessment would meet botany standards and guidelines of the Forest Plan, as amended.

3.13 Heritage Resources Affected Environment

The Suiattle Watershed Analysis (USDA Forest Service 2004) provides an overview of the past uses and known heritage resources near the project analysis area. Information specific to the area was gathered by using record searches and a heritage resource field survey to identify historic properties that may be affected by the proposal and to provide a contextual framework within which documented heritage resources can be evaluated (i.e., Major 2011; Schurke 2010; and Silverman et al. 2009). In addition, information was provided through government-to-government consultation with the local tribes, and through consultation with the State Historic Preservation Officer (SHPO). Information gathered because of these efforts is summarized below and in an analysis file to provide a background for the evaluation of impacts on historic properties.

For this project, the Forest Service and the Western Federal Lands Highway Division of the FHWA has fulfilled its general trust responsibilities through the proper management of natural resources as determined in the Forest Plan, and through continued consultation with Indian tribal governments.

The proposed action has been determined to meet the definition of an "undertaking" pursuant to Section 301(7) of the National Historic Preservation Act (NHPA) and is therefore subject to Section 106 of the NHPA. The Forest's and FHWA's responsibilities to address the effects of a proposed undertaking on historic properties is fulfilled through the process provided in 36 CFR 800 and a Programmatic Agreement developed in consultation with the Advisory Council on Historic Preservation (ACHP) and the Washington SHPO pursuant to Section 800.13 of the 1986 Regulations (36 CFR 800) implementing Section 106 of the NHPA.

Records search determined there was a potential for heritage resources. Review of the Inventory of Native American Religious Use, Sites, Practices, Localities (Blukis Onat and Hollenbeck, 1982) identified areas potentially of concern to local tribal groups. Sauk-Suiattle Tribal Council identified this area of the Suiattle to be of interest to them and wanted to retain vehicle access to the allotment and other areas accessed by the Suiattle Road 26. Both the Sauk-Suiattle Tribe and the Upper Skagit Tribe identified the Chinook salmon that spawn in Downey Creek as an important resource to them.

The Area of Potential Effect (APE) for the proposed project was determined pursuant to the Programmatic Agreement Regarding Cultural Resources Management on National Forests in the State of Washington and in consultation with the SHPO per 36 CFR Part 800.4 (a) (1).

Surveyed locations and intensity were determined in accordance with the Forest's Cultural Resource Inventory Strategy (Hearne and Hollenbeck, 1996). Cultural surveys of the project area were conducted in 2004, 2008, 2009 and 2011. Historical Research Associates, Inc. undertook the cultural resource identification survey within portions of the proposed project APE in November 2008 (Silverman et al. 2009). In November and December 2009, the Forest, FHWA and the Sauk-Suiattle Tribe conducted a culturally modified tree survey in portions of the proposed project APE at milepost 6.0 and 12.6 (Schurke 2010). In April 2011, the Washington DNR conducted a cultural resources identification survey in the APE for the updated realignment at milepost 6.0 (Major 2011). No archaeological materials were observed in subsurface excavations within the proposed project APE. Four cultural resource properties were identified within the proposed project APE at mileposts 6.0, 12.6 through 13.4 and 14.4. Through consultation between the Forest, FHWA, SHPO, DNR and Sauk-Suiattle Indian Tribe, three of these cultural resource properties were determined eligible for listing on the National Register of Historic Places (NRHP) and therefore considered historic properties according to Section 106 of the NHPA. Continued consultation between the Forest, FHWA, SHPO, ACHP, DNR and Sauk-Suiattle Indian Tribe, determined that only one NRHP-eligible historic property will be adversely affected by the proposed project in the project area of MP 6.0 to MP 14.4. To resolve the adverse affect to this historic property, the SHPO, FHWA, Forest and Sauk-Suiattle Tribe signed an MOA on May 24, 2010 and the MOA was sent to the ACHP on June 8, 2010. The Forest concluded consultation with SHPO in 2011 on the upper portion of the project covering MP 20.8, 20.9 and 22.9. SHPO concurred with the APE, the professional recommendations, and the finding of No Historic Properties Affected (Letter dated June 1, 2011).

Treaty Resources and Reserved Indian Rights

Treaties, statutes, and executive orders obligate federal agencies to fulfill certain trust responsibilities. The extent to which treaty resources (related to hunting, gathering, and fishing on NFS lands) are present or to which federally recognized tribes depend on the project area for treaty resources is not fully known.

Lacking specific information from some tribes regarding treaty resources in the project area, this discussion focuses on a narrow range of resources recognized as having high values to Indian people for subsistence, cultural, and ceremonial uses (e.g. western red cedar, salmon, medicinal plants and other forest products and access to ceremonial use areas).

The rights of tribal members to access NFS lands and exercise Treaty rights are unchanged. There may be indirect and cumulative effects to tribal hunting, gathering and fishing practices related to changes in management, access, and effects to fish, wildlife and plant resources. For this project, the Forest Service fulfills its general trust responsibilities through the proper management of natural resources as determined in the Forest Plan and through continued consultation with Indian tribal governments.

The Suiattle watershed was part of the ancestral territory of the present day Sauk-Suiattle Tribe. Traditional American Indian uses include fishing, hunting, and gathering. Current uses of the watershed by tribal members include the exercise of treaty rights and practices of ceremonial and religious significance. The privacy and purity issues surrounding these practices are of concern to the Indian community.

Heritage Environmental Consequences

3.13.1 Alternative A (No Action)

The road washouts limit access for elders and tribal members to traditional and cultural areas along the Suiattle River with no drivable access beyond MP12.6 to Sulphur Creek. The road closure at MP 12.6 would be retained with access beyond the gate by foot, stock and bicycle. There would be no effect on historic properties.

Without any repairs, the last 10.6 miles of Road 26 plus an additional seven miles of other roads would be inaccessible by motorized vehicle in the near future (estimated within five years). Approximately 17.5 miles of road (Roads 26, 2680 and campgrounds) would be inaccessible to vehicles and this would limit access to traditional and cultural areas by elders and tribal members. Gathering of cedar, medicinal plants, mushrooms, berries and other forest products would either be foregone or would be shifted to other parts of the Forest. Evidence of heavy use of portions of the Sauk River drainage for cedar bark pulling was reported to the District by concerned tribal staff (Phyllis Reed, personal communication, 2011).

Risks to fish resources important to Tribal members would continue to include sediment delivery from untreated roads with limited access for road maintenance and upgrade of culverts or road drainage. Sediment delivery in the Suiattle River will continue from glaciers. There would be no change in the fill currently within the floodplain at Downey Creek from the road approach to the Downey Creek Bridge (MP 20.9). Chinook would continue to use the Downey Creek main channel for spawning with no change in the width of the floodplain or connection of side channels which are currently blocked by a fish passage culvert and road fill. Effects to tribal practices as they relate to access and effects to fish, wildlife and plant resources are discussed in the various other resource section of Chapter 3 and in the specialists reports prepared for this project.

Heritage Cumulative Effects

Heritage Resources: The affected area for cumulative effects to heritage resources was the Suiattle River drainage from MP 6.0 to MP 23.2. There are projects that overlap this project as it relates in space or time with proposed road work on FSR 26 and FSR 2680.

Past actions and natural events that preceded the creation of the National Historic Preservation Act of 1966 and other historic preservation laws may have impacted an unknown number of heritage resources that might today qualify as NRHP historic properties. Past actions taken on National Forest lands in the Suiattle River watershed have been determined to not adversely affect historic properties. No present projects are known to be having effects, and no foreseeable projects are expected to have adverse effects to historic properties.

If action proposals are implemented, and if there are any new discoveries of historic sites, the sites would be protected from disturbance as described in the Chapter 2 mitigation measures for heritage resources, then no alternative will contribute to adverse cumulative effects.

Treaty Resources: The affected area for cumulative effects to treaty resources was determined to be the Suiattle River drainage from MP 6.0 to MP 23.3. This project would restore vehicle access to historic use areas and does not call for the closure of any roads over what currently exist within the project area. There may be some temporary cumulative effects on use from traffic control in locations due to road improvements as they relate to this and other projects in the drainage using the same road system. Once the activities are completed, vehicle traffic would be expected to return to pre-flood use, with use dispersed on the repaired road system for accessing resources within the drainage.

The rights of Tribal members to access NFS lands and exercise Treaty rights would be unchanged. Any indirect or cumulative effects to quality of the Tribal hunting, gathering and fishing experience would be related to changes in management, access, and the effects to fish, wildlife and plant resources. For this project, the Forest Service fulfills its general trust responsibilities through the proper management of natural resources as determined

Heritage Forest Plan Consistency

All Alternatives would be consistent with standards and guideline for heritage resources in the Forest Plan, as amended.

3.13.2 Alternative B

If implemented, this alternative would restore vehicle access to the end of Road 26 and to the Green Mountain and Sulphur Creek area for elders and tribal members. There would be no effect on historic properties. This option would provide for a return of full utilization of the Suiattle River drainage with approximately 50% increase of drivable access for Tribal elders. Medicinal plants, cedar bark and roots, and other forest products would be collected across a larger area with potential for less concentration of collection sites.

Risks to fish resources important to Tribal members were assessed in regards to sediment delivery from road repairs, and specifically for the potential for sediment delivery from MP 20.8, both with the repairs and in future maintenance. The river channel movement was reviewed for potential to further erode the toeslope at MP 20.8 and result in sediment delivery to the river and spawning habitat of the Chinook salmon. The toeslope is developing a natural boulder armoring of the toeslope as high water carries lighter weight material from the water's edge, leaving the larger boulders and instream wood. The shift of the road into the slope will allow slope erosion to continue to provide recruitment of gravels for spawning

habitat. The road repair will allow the access for road maintenance and upgrade of culverts and road drainage.

Alternative B would remove the fill currently in the floodplain at Downey Creek from the road approach to the Downey Creek Bridge (MP 20.9). Chinook would continue to use the Downey Creek main channel for spawning with the addition of the width of the floodplain connection to a side channels which had been unavailable due to the existing culvert and road fill. This would expand potential spawning habitat for a fish identified by local Tribes as an important resource to them. Effects to tribal practices as they relate to access and effects to fish, wildlife and plant resources are discussed in the various other resource section of Chapter 3 and in the specialists reports prepared for this project.

3.13.3 Alternative C

If implemented, this alternative would restore vehicle access to the junction of Road 26 and 2680. Sulphur Creek area would remain an approximate four mile hike for elders and tribal members, potentially limiting use. This option would provide for partial utilization of the Suiattle River drainage with approximately 30 percent increase of drivable access for Tribal elders. (additional area from MP 12.6 to MP 19.0). Medicinal plants, cedar bark and roots, and other forest products would be collected across a larger area with potential for less concentration of collection sites. There would be no effect on historic properties.

There would be no repairs at MP 20.8 and no repairs to the approach to Downey Creek Bridge (MP 20.9) or the approach to Sulphur Creek Bridge (MP 22.9) at this time. Effects at these sites would be as described in the No action alternative, Alternative A. Risks to fish resources important to Tribal members would continue to include sediment delivery from untreated roads with limited access for road maintenance and upgrade of culverts or road drainage. Sediment delivery in the Suiattle River will continue from glaciers. There would be no change in the fill currently within the floodplain at Downey Creek from the road approach to the Downey Creek Bridge (MP 20.9). Chinook would continue to use the Downey Creek main channel for spawning with no change in the width of the floodplain or connection of side channels which are currently blocked by a fish passage culvert and road fill. Effects to tribal practices as they relate to access and effects to fish, wildlife and plant resources are discussed in the various other resource section of Chapter 3 and in the specialists reports prepared for this project.

3.14 Environmental Justice Affected Environment

In the past decade, the concept of Environmental Justice has emerged as an important component of Federal regulatory programs, initiated by Executive Order No. 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This Executive Order directed each Federal agency to "make achieving environmental justice by avoiding disproportionately high or adverse human health or environmental effects on minority and low income populations" a part of its mission. This Order emphasized that Federally recognized Native tribes or bands are to be included in all efforts to achieve environmental justice (Section 6.606).

The demographics of the affected area were examined to determine the presence of minority, low income, or tribal populations in the area of potential effect. The Tribal Councils were also sent letters as part of the scoping process. The race and ethnic profile of the local census tract from the 2000 Census is presented in the following table.

Table 15: Race and Ethnicity Profile
Census Tract 537, Snohomish County, Washington

Race or Ethnicity	Percentage of Population
White	94.5
Black or African American	0.1
American Indian or Alaskan Native	3.9
Asian	0.4
Some other race	0.9
Hispanic or Latino* (of any race)	1.0

** Percentage adds to more than 100 percent because Hispanic and Latino is a category of ethnicity and includes more than one race category (black, white, etc.)*

Snohomish County as a whole has a smaller percentage of Native Americans (1.4%) and a larger contingent of African Americans (1.7%) and Asians (5.8%) than that in Census Tract 537 *(Darrington Area). The Sauk-Suiattle Tribal lands are in Census Tract 537 as reflected in the larger percentage of Native Americans here.

There is no known commercial use of this area for forest products. Tribal members use the affected area for gathering and other uses.

Environmental Justice Consequences

See the previous Heritage Resource section for effects on traditional and cultural use by tribal elders and members. The alternatives would not have any disproportionately high or adverse effects to low income, women, or minority populations.

3.15 Socioeconomic Affected Environment

According to the U.S. Census 2000 for the local area (Census Tract 537), the four primary industry types in the local area are: 1) manufacturing; 2) education, health, and social services; 3) construction; and 4) agriculture, forestry, fishing, hunting, and mining. Based on 2009 information from http://www.city-data.com/city/Darrington-Washington.html, the town of Darrington's median household income was $38,927, with approximately 13 percent of households below the poverty level.

Local Economy

In the past, the economy of the Darrington area was heavily dependent on lumber manufacturing and logging. The Darrington community has been trying to diversify their local economy to increase tourism and recreation. The community has supported national and world archery tournaments, Blue Grass Music Festival, rodeo, and other music festivals. Recreation visitors are attracted to the area for a variety of outdoor pursuits and recreational driving. Access to recreational sites is an important part of the desired recreational experience for both local residents and visitors. Recreationists spend money to acquire equipment related to their recreation activities and they spend money on food, transportation, lodging, and other services for travel to and from their recreation sites. While much money for recreational equipment and supplies is spent in their home area or area of origin, prior to the start of the trip, some money is spent along the way and possibly near the destination site. These expenditures contribute to personal income and to the creation and maintenance of jobs in the affected economic sectors (e.g. lodging, gas, groceries, restaurants, auto repair, etc.).

The majority of recreationists would spend money in the Darrington area for incidentals like snacks, food and supplies, restaurant meal on the way through, or gas fill ups. These assumptions would lead to the

conclusion that a small portion of the each recreation trip expenditures would be spent in the Darrington area. If there were a large number of recreation users, the incidentals spent in the Darrington area could have a measurable effect on a local retail business such as a store or restaurant.

Socioeconomics Environmental Consequences

The effects in the local economy are not easily separated from general fluctuations brought on by a variety of factors (national and regional economy, weather, events in Darrington, etc.) although there could be measurable effects on local businesses that sell food or gas[9]. Most of the economic impact would depend on whether developed campgrounds or trailheads are reopened to motorized vehicle access. Sulphur and Buck Creek Campgrounds are two of the 36 developed fee campgrounds on the Forest and there has been an estimated reduction of 2,000 to 7,500 visitors. If half the visitors spent $10 in Darrington for food or gas that would add up to $10,000 to $37,000 annually and that amount could affect the profit margins of a local retail businesses. The Suiattle Trailhead is one of the major portals into the Glacier Peak Wilderness. Some of the wilderness users would probably seek other wilderness areas outside the Darrington area. There is an estimated reduction of 2000 users at the Suiattle Trailhead, which could have spent $10,000 annually in Darrington for incidentals.

In summary, the economic impact on the Darrington area as a result of the alternative chosen is likely to be small, but even a small increase in business could impact some of the retail businesses and possibly be the difference between success and failure. No action would have the greatest impact as two campgrounds and major trailheads would not be accessed by vehicle and the additional approach distance to the trailheads (1.5 to 10.5 miles) and associated time may lead visitors to select other locations. The action alternatives would create contracts for existing companies to bid on while the No Action alternative would not. Alternative B would restore access and visitor back to pre-flood levels and bring more revenue to local retail businesses from food and gas expenditures by visitors.

Socioeconomics Cumulative Effects

The 2003, 2006 and 2007 flood events did impact access to Darrington District recreation sites and resulted in an effect on Darrington businesses from the reduced number of tourists and recreationists. The following table displays the number of visitors at the Darrington Ranger Station over the past 10 years. The number of persons stopping at the Darrington Ranger Station is only a portion of the actual visitors and local persons using the National Forest lands, but the over 50 percent reduction in visitors from 2002 to 2007 suggests that the closure of roads has a strong negative impact on numbers of visitors to the area and on the local economy.

Table 16: Visitors per Year at the Darrington Ranger Station

Year	Visitors
2011	6,776
2010	6,517
2009	5,847
2008	6,122
2007	5,082

9 A letter from the Mayor of Darrington (August 2005) indicates that the drop in tourism has affected the businesses in town. (Letter on file at the Darrington Ranger District).

Year	Visitors
2006	6,067
2005	7,361
2004	7,011
2003	10,851
2002	11,021
2001	9,824
2000	8,941

There were significantly fewer visitors at the Ranger Station in 2004 and 2005, the years after the October 2003 flood washed out many roads and trails. Visitor numbers continued to decline after the 2006 and 2007 flood damage on the Suiattle and White Chuck (which closed additional sections of roads already impacted by the 2003 flood). The closure of the Mountain Loop Highway until 2008 greatly reduced the number of tourists in the area, with an estimated reduction of 30,000 to 45,000 vehicles per year during the years the road was closed. If half the vehicles had stopped and spent $10 each, that would total $150,000 to $225,000 per year from the Mt. Loop traffic alone. Letters from local businesses and the Mayor of Darrington indicate that the drop in tourism had affected the businesses in town. There is no data to measure what the impact has been on the local businesses and economy, but many community members feel that reopening the forest roads would benefit businesses due to increased recreational users attracted to the area (Darrington community meetings in October 2005 and January 2006). The continued low numbers of visitors is attributed to the lack of road access to trails, campgrounds and the major portals of Glacier Peak Wilderness since the 2006 and 2007 floods. During 2003 to 2011, the community of Darrington has lost several businesses, including the local sporting store, a "dollar" store, and a restaurant/bar.

3.16 Air Quality Affected Environment

The Glacier Peak Wilderness (east of the project area) is a Class I area for air quality protection. Visibility is a value that is protected primarily within the boundaries of the Class I area. Glacier Peak Wilderness visibility is officially monitored at a site shared with the National Park Service and located at Ross Lake. Another site is located at Snoqualmie Pass for Alpine Lakes Wilderness and has some applicability to conditions as visibility at Glacier Peak probably falls somewhere in between what is measured at the two sites. Average natural visibility in the western United States is estimated to be about 110 to 115 miles. The visual range measured at Ross Lake is very close to this, showing that the visibility is generally excellent. Visibility at Snoqualmie Pass is more impaired.

Air Quality Environmental Consequences

Alternative A

There would be no change in air quality conditions.

Alternatives B and C

No burning is planned with this project so there would not be any impacts on visibility from smoke. Any dust from proposed work would be short-term in duration (a few months at most) and very site-specific to the roads proposed for decommissioning, closure, or upgrading. There would be no effects past the

construction phase. Any dust impacts from motor vehicle use would be similar to previous levels. No cumulative effects would be expected. Use of vehicles and equipment would return to previous levels.

3.17 Irreversible and Irretrievable Commitment of Resources Affected Environment

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. The actions described in this document would not cause an irreversible commitment of resources other than removing rock from a Forest Service or commercial rock source (Final EIS for the Forest Plan IV-203).

An irretrievable commitment of resources occurs when opportunities are foregone for the period of time that the resource cannot be used. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line right of way or road.

Irreversible and Irretrievable Commitment of Resources Environmental Consequences

3.17.1 Alternative A (No Action)

No change in commitments of resources would be made.

3.17.2 Alternatives B and C

Under active management, irretrievable resource commitments are unavoidable, because managing resources for any given purpose necessarily precludes the opportunity to use those resources for other purposes. The construction of roads is a reversible commitment because it is possible to obliterate the entire road site and return the area to its previous condition. However, a resource that would be irretrievably lost because of the commitment to a road system is an irretrievable loss of tree growth and wildlife habitat where vegetation is removed. Under Alternative B and C, any road segment not scheduled for obliteration [decommissioning], represents an irretrievable commitment of resources for as long as the road is a valued asset. The relocation of the road under Alternative B and C would be an irretrievable commitment of an additional five acre of forested area into a road, with approximately two acres of abandoned road committed back to growing vegetation and functional wetlands.

3.18 Wilderness, Inventoried Roadless Areas, Unroaded Lands Affected Environment

The proposed Suiattle Road 26 repairs are not located within Congressionally designated wilderness or within Inventoried Roadless Areas. Effects on access to the wilderness are described in this assessment in the section on Roads and Access and Recreation.

The nearest Inventoried Roadless Area (IRA) is Glacier Peak J 6031 (USDA Forest Service 1990, p. C-106). Its boundary lies north of Site #5, northwest of Site #7 and across the Suiattle River on the south side from Site #8. There would be no direct, indirect, or cumulative impact on this IRA or its roadless characteristics if any of the alternatives were implemented, including no action.

Wilderness, Inventoried Roadless Areas, Unroaded Lands Environmental Consequences

The project area is currently roaded (see Figure 1). Under all alternatives, the area would remain roaded.

3.18.1 Alternative A (No Action)

If the No Action alternative were implemented, the project area would remain roaded—with short damaged sections until there was funding or a decision to abandon, decommission or convert the road to trail. No road decommissioning would be done at this time, nor road surface/drainage structures removed. It is unlikely that any acreage would attain the characteristics of unroaded lands in the short-term (one to five years) or in the estimated long-term (10 to 25 years), and therefore would not meet unroaded status for inventory consideration as potential wilderness (as per FSH1909 Interim Directive No. 1909.12-2005-8).

3.18.2 Alternative B

If Alternatives B was implemented, the area would continue to be roaded with motorized activity on Road 26 to the terminus.

3.18.3 Alternative C

If Alternative C was implemented, the area would be roaded with motorized activity to the junction of Road 26 and Road 2680. The last 4 miles of Road 26 would continue to be roaded until there was funding or a decision to abandon, decommission or convert the road to trail. No road decommissioning would be done at this time, nor road surface/drainage structures removed. It is unlikely that any acreage would attain the characteristics of unroaded lands in the short-term (one to five years) or in the estimated long-term (10 to 25 years), and therefore would not meet unroaded status for inventory consideration as potential wilderness (as per FSH1909 Interim Directive No. 1909.12-2005-8).

Prime Farmland, Rangeland, etc.

Prime forestland, as defined by Natural Resources Conservation Service[10] may be found on the MBS National Forest. However, it is estimated that none of the alternatives, including No Action, would have any measurable impact on such land.

There is no prime farmland or rangeland within the project area. Noise, climate, minerals, energy, fire, insects, disease, etc. were considered, but are not described here because they are associated with limited or no impacts.

Wetlands and Floodplains

Wetlands

Under the Alternative A, there would be no impacts to wetlands. Wetlands in the ditchlines along the roads would continue to exist in their current state.

Under Alternatives B and C, impacts to wetlands are minimized through road location and design to approximately 0.66 acre of wetland. A small wetland was identified near the proposed road reroute at

[10] Land capable of growing wood at the rate of 85 cubic feet per acre per year at culmination of mean annual increment.

Site #1 that would be crossed with the new road alignment. Wetlands were identified near the proposed reroute between Site #3 and Site #4. The reroute would cross above wetlands associated with the Suiattle floodplain, and allow for restoration or reconnection of wetlands and floodplain in the decommissioning of Road 26 from M.P. 13.0 to MP 13.8. Road design minimizes impacts to the wetlands by relocating the road location upslope, decommissioning nearly a mile of road in the Suiattle River floodplain, providing for reconnection of wetlands and river. The road design would include strategically placed drainage culverts to maintain the hydrologic regime of both wetlands and provide outlet drainage toward the river. (See A-EA Chapter 3, hydrology section for more discussion on wetlands.)

Floodplains

Under the Alternative A, there would be no change in restrictions to channel migration at the repair sites other than what the natural landscape imposes through steep inner gorge slopes all along the Suiattle River.

Under Alternatives B repairs at Site #1 would move the road location outside of the channel migration zone. Site #2 would reconstruct the roadway upslope on a terrace, outside of the flood zone. Realignment of Road 26 at Sites #3 to #5 shifts the road out of the floodplain and road decommissioning at MP 13.0 to MP 13.8 would remove the road from the channel migration zone. Repairs at MP 20.8 would be above the ordinary high water mark, while repairs at MP 20.9 would extend Downey Creek Bridge and allow for the removal of a culvert and road fill within the Downey Creek floodplain.

Alternative C would have the same effects as Alternative B through repairs at Site #5 (MP 14.4). There would be no changes at MP 20.8 to MP 22.9 in floodplain restrictions. There would be no extension of the Downey Creek Bridge and no removal of the culvert or fill in the Downey Creek floodplain.

Refer to the Hydrology and Fish sections for a discussion of these effects. None of these effects would compromise the overall processes of the river and watershed.

Repairs at Site #1 are designed to minimize the effect of the road on the river. Repairs at Sites #2 through #8 are not within the floodplain. The repairs at Sites #2 and #3 allow the opportunity to relocate a portion of the road, avoiding the encroaching river.

3.19 Potential Conflicts with other Jurisdictions

Over 300 private individuals, groups, and government agencies including tribal representatives have been contacted regarding this Project. Further, public notices and several articles have been published in various forms of the media. There are no known conflicts between the alternatives discussed in this document and the plans and policies of these other jurisdictions.

3.20 Climate Change

None of the Alternatives are expected to have any measurable impact on climate change caused by greenhouse gases. The volume of traffic and the limited effect on the natural environment limit the possibility that the project would cause measurable impact. Project Alternatives B and C will help meet the expected impacts of climate change in the local area. Further discussion about climate change can be found in Appendix C.

3.21 Section 4(f) of the United States Department of Transportation Act of 1966

Section 4(f) of the Department of Transportation (DOT) Act of 1966 states that "the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation areas, wildlife and waterfowl refuge, or historic sites resulting from such use."

Resources covered by Section 4(f) include historic sites and recreational sites. Neither of the action alternatives will use any recreational resource for purposes of Section 4(f), except for a potential use of the wild and scenic river corridor.

The FHWA proposes that any use of the corridor falls within the *De minimis* provision of the statute and regulations, and is seeking comment on this proposal concurrent with the NEPA public comment period. No comments were received during the March 2012 public comment period.

FHWA has determined the archaeological sites identified during the cultural resources survey are Section 4(f) resources, but are exempt from further evaluation under the Act because they are important chiefly for what can be learned by data recovery and have a minimal value for preservation in place per 23 CFR 774.13(b)(1)and(2). The FHWA notified the Washington SHPO/Department of Archeology and Historic Preservation (DAHP), as the official with jurisdiction, of this determination in a letter dated January 21, 2010. The DAHP has not objected to the exemption.

4 Chapter 4 - Consultation and Coordination

The Forest Service consulted individuals, Federal, State, local agencies and Tribes on behalf of the Federal Highway Administration, during the development of this environmental assessment.

4.1 Federal, State, and Local Agencies

4.1.1 US Fish and Wildlife Service (FWS)

Consultation with the FWS on the effects of the proposed project on threatened and endangered ***fisheries*** species occurred under the Five-Year Programmatic Biological Assessment for Forest Management: MBS National Forest for 2004- 2009. The letter of concurrence from FWS (June 17, 2004) covers projects with "may effect, not likely to adversely affect" determinations for the bull trout (US Fish and Wildlife Service Reference number 1-3-04-PI-0606). The Programmatic Biological Assessment and Opinion were reviewed and extended in 2009 (US Fish and Wildlife Service May 7, 2009), with additional annual reviews and extensions pending the completion of an updated multi-year Programmatic Biological Assessment and Opinion.

Consultation with the FWS on the effects of the proposed project on threatened and endangered ***wildlife*** species occurred under both programmatic and formal assessments. The wildlife formal consultation was completed under a Biological Assessment and Biological Opinion in 2009 and the Five-Year Programmatic Biological Assessment for Forest Management: MBS National Forest for 2003-2007 (USDA Forest Service, 2002), with project consistency evaluations in both 2006 and 2011. The 5-year Programmatic Biological Assessment and Opinion were revised and updated in 2007 (US Fish and Wildlife Service Dec. 18, 2007, Ref. No. 13410-2006-F-0015). On May 7, 2009 the FWS issued a second extension letter to extend the expiration date (Ref. No. 13410-2006-F-0015) for the existing programmatic biological opinion for coverage through December 31, 2009. On March 19, 2010 the FWS issued a third extension letter (Ref. No. 13410-2006-F-0015) for the existing programmatic biological opinion for coverage until the programmatic could be revised. In their Programmatic Biological Opinion, the FWS granted incidental take of spotted owl and marbled murrelet due to harassment from noise generating projects (US Fish and Wildlife Service Reference Number 1-3-02-F-1583). The Biological Opinions included concurrence with determinations of effects to grizzly bear, gray wolf and Canada lynx, and critical habitat for spotted owl and marbled murrelet.

The U.S. Fish and Wildlife Service (FWS) published a proposed rule (Federal Register/Vol.77, No.46/Thursday, March 8, 2012, at: http://www.gpo.gov/fdsys/pkg/FR-2012-03-08/pdf/2012-5042.pdf) to revise designation of critical habitat for the Northern Spotted Owl (NSO) under the Endangered Species Act (ESA) of 1973, as amended. Additional information on the proposed designation can be found at: http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/main.asp. The existing NSO critical habitat designation (2008) was not withdrawn by the proposed rule revision; therefore, Section 7 consultation with FWS is still required for action that "may affect" the currently designated or existing critical habitat.

Following the publishing of the of the proposed rule, potential effects of all proposed and ongoing actions located within proposed critical habitat was reviewed and re-assessed by the Forest Service. The Road 26 repairs were assessed as a "may effect, not likely to adversely affect critical habitat" determination for actions within the existing 2008 critical habitat of the Suiattle River drainage. The Road 26 project was reviewed with the March 2012 published rule, and a determination made by the Forest wildlife biologists

that based on information available at this time, there would be no changes in the effect determination for critical habitat from Road 26 repairs from the effects' determinations of previous consultations. The Mt. Baker-Snoqualmie Forest Wildlife Biologist provided the following assessment of Forest projects in an e-mail of 3/28/12 to forest staff: "At this time there isn't a need to "conference" with the FWS on the new proposed spotted owl critical habitat. ".

In June 2012, FWS released a draft environmental assessment on revised owl critical habitat (CH) for comment. The final rule on this action is scheduled for publication in the *Federal Register* on or before November 15, 2012. FWS provided the following guidance:

"*The implementing regulations for section 7 require a conference under circumstances where a Federal action agency or the Service determines that the agency's proposed or ongoing discretionary action is likely to jeopardize a proposed species or is likely to destroy or adversely modify proposed CH.". Although a conference is only required under the above, the Service generally recommends that Federal action agencies also consider a conference for proposed or ongoing discretionary actions that "may affect" a proposed species or any of the PBFs or the PCEs of proposed CH to streamline the consultation process after a proposed rule becomes final.*

The Mt. Baker-Snoqualmie Forest has had informal discussions with FWS staff of the Lacey, WA office on the pending decision for spotted owl critical habitat and the timing to conference on on-going and proposed projects (Level 1 team, June and July 2012). At this time, FWS's preference is to not conference on proposed projects due to the on-going comment period for the proposed critical habitat rule and the potential for changes in the amount of area included as critical habitat, changes in the final PCEs or in the affects determinations from the draft EA to final EA and published rule.

4.1.2 National Marine Fisheries Service

Road repair consultation for Chinook salmon and steelhead for this project is covered under the Five-year Programmatic Concurrence on Not Likely to Adversely Affect Projects within the Programmatic Assessment for the U.S. Forest Service's Mt. Baker-Snoqualmie National Forest and Essential Fish Habitat Consultation, and Programmatic Biological Opinion on the Forest Service's Programmatic Biological Assessment for the Mt. Baker-Snoqualmie National Forest and Essential Fish Habitat Consultation (2003). This programmatic Biological Assessment and Opinion were reviewed and extended in 2008 and 2009 and remain in effect.

Riprap removal is covered under Endangered Species Act – Section 7 Programmatic Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation, Fish Habitat Restoration Activities in Oregon and Washington, CY 2007-2012 (National Marine Fisheries Service 2008).

4.1.3 Washington Department of Fish and Wildlife

The proposed projects are covered under a Memorandum of Understanding between Washington Department of Fish and Wildlife and USDA Forest Service, Pacific Northwest Region Regarding Hydraulic Projects Conducted by USDA Forest Service, Pacific Northwest Region, January 2012.

4.1.4 Washington State Historic Office

The proposed action was determined to meet the definition of an "undertaking" pursuant to Section 301(7) of the National Historic Preservation Act (NHPA) and is subject to Section 106 of the NHPA. The Forest's and FHWA's responsibilities to address the effects of a proposed undertaking on historic

properties were fulfilled through the process provided in 36 CFR 800 and a Programmatic Agreement developed in consultation with the Advisory Council on Historic Preservation (ACHP) and the Washington State Historic Preservation Office (SHPO) pursuant to Section 800.13 of the 1986 Regulations (36 CFR 800) implementing Section 106 of the NHPA. Consultations with SHPO were concluded in June 2011 and in January 2012 for adjustments in proposed design elements at Mile Post 6.0.

4.2 Tribes

The following Tribes and Tribal Organizations were consulted on a government-to-government basis.

Lummi Indian Business Council
Samish Tribe
Sauk-Suiattle Tribal Council
Stillaguamish Board of Directors
Swinomish Tribal Community
Tulalip Board of Directors
Upper Skagit Tribal Council

4.3 Others

The mailing list of those individuals and interest groups who received information regarding this proposal can be found in the Project Record. The scoping history and response to scoping comments are found in Appendix D.

5 Chapter 5 – List of Preparers

Federal Highways Administration staff in Vancouver, Washington (Western Federal Lands Highway Division) had the lead in preparing the Amended Environmental Assessment, with assistance from USFS personnel on the Mt. Baker-Snoqualmie National Forest.

FHWA Staff:

Denise Steele – FHWA Environmental Protection Specialist
Mike Schurke – FHWA Archeologist
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Phyllis Reed – USFS Project Liaison, Wildlife Biologist, Environmental Coordinator
Carol Gladsjo – Public Services
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Loren Everest – Fisheries Biologist
Phil Eidenberg-Noppe – Hydrologist
Jan Hollenbeck – Forest Archeologist
Ann Risvold – Botanist
Gary Paull – Forest Trails and Wilderness Coordinator

The Forest Service consulted the following individuals, federal, state and local agencies, and tribes during the development of this A-EA:

National Oceanic and Atmospheric Administration (National Marine Fisheries Service or NMFS)
U.S. Fish and Wildlife Service (USFWS)
Washington State Historic Preservation Office
Sauk-Suiattle Tribal Council
Lummi Indian Business Council
Nooksack Indian Tribal Council
Samish Tribe
Upper Skagit Tribal Council
Snoqualmie Tribe
Stillaguamish Board of Directors
Swinomish Tribal Community
Tulalip Board of Directors

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