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Suiattle Road 26 Final Environmental Assessment

Chapter 1 Purpose and Need

Introduction

This Environmental Assessment (EA) was prepared for the proposed Suiattle Road 26 Repair. Record rainfall in October 2003 produced some of the most severe storm damage seen on Mt. Baker-Snoqualmie (MBS) National Forest System lands in many years. During a 24-hour period, more than six inches of rain fell in the forest lowlands and up to 10 inches in the higher elevation areas. Many roads, trails, recreation sites, and watersheds were damaged, primarily in the north half of the Forest (eastern Snohomish, Skagit, and Whatcom Counties).

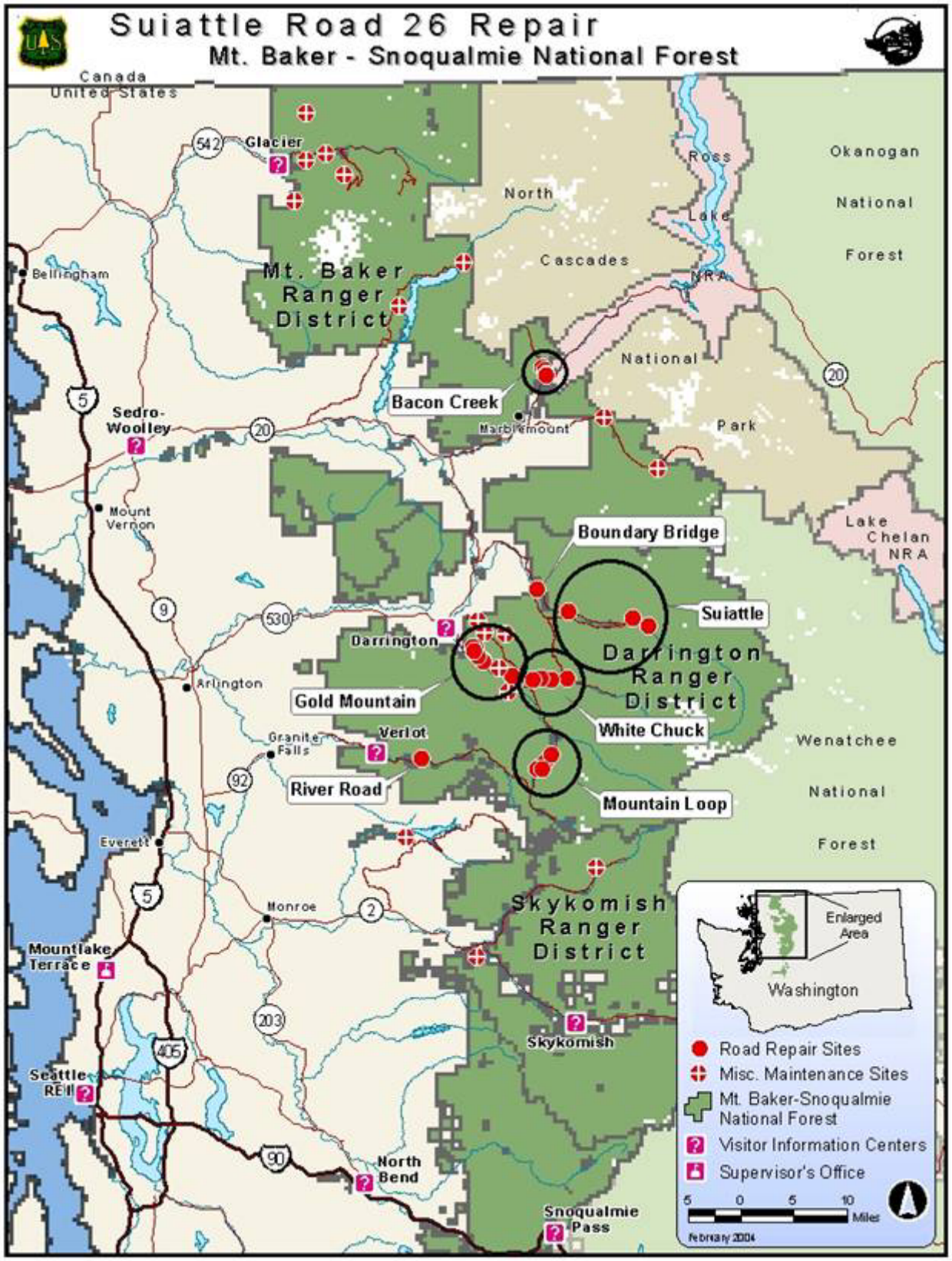
The initial assessment of the repairs to be made and the estimated funding required to repair flood damage was determined through the Federal Highways Administration's Damage Survey Reports (DSRs). The flood-damaged sites are, for the most part, located on the Darrington and Mt. Baker Ranger Districts. ERFO (Emergency Relief for Federally Owned Roads) program is designed to help pay the unusually high cost of maintenance and repair caused by a natural disaster over a wide area. Funds are managed by the Federal Highway Administration and are allocated to each flood damage site.

Mt. Baker-Snoqualmie National Forest staff reviewed the location and extent of the flood damage to National Forest System (NFS) roads and discussed various means of analysis of the damage and response options. The Forest team determined that environmental assessments of the flood damage by geographical area and connecting roads would best address the issues and resource concerns (see the vicinity map). The Forest Supervisor and Rangers determined that this grouping of damage sites by road system within defined geographic areas would best meet the criteria of responding to the flood event in a logical and timely fashion. Questions asked by the team included:

- Would repair (or not) of a road influence repairing or using another road system?
- Can the effects of other projects best be met in a single large assessment or in the cumulative effects assessments of individual projects?

The Forest Service team analyzed the various proposals and determined that the scattered road damage repairs constituted similar, but not necessarily connected, actions. The decision of whether to repair or not and how is not connected to other road repairs. The damage resulted from the same flood event, but the repairs are not connected; and can take place independently of each other. Therefore, for the purposes of site-specific analysis required by the National Environmental Policy Act (NEPA), the damaged sites were grouped by road system into logical geographic areas, to address the site-specific problems or need for action. The rationale for analyzing the road damage separately, rather than in a single analysis and document, is that the actions are similar in scope but are not considered connected actions because to repair or not repair any one road system would be independent of use of the other road systems being analyzed. The preliminary estimates of impacts of the repair /no repair options were not viewed as having significant effects or cumulative impacts. An Environmental Impact Statement (EIS) is required when there are significant effects. The Responsible Official (District Ranger) decides whether there are significant effects or whether an EIS is needed. Further discussion can be found in the *Project Scope* on page 5 and in the project files.

Figure 1: Vicinity Map



Purpose and Need for Action

There is a need to repair road damage on Suiattle Road 26 to restore vehicle access to this portion of the Suiattle watershed. Restoring vehicle access is needed for both Forest Service administrative needs, and for public recreational uses. This section of Road 26 provides access to two campgrounds, seven trailheads, two lookouts, a cabin rental, pasture, boating on the river, and for scenic driving, gathering, snow play, hunting, fishing, private property, and the exercise of treaty rights.

The purpose of the proposed action is to meet the goals and objectives outlined in the Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan (Forest Plan), which include managing the transportation system at the minimum standard needed to support planned uses and activities and provide for public safety (USDA Forest Service 1990, p. 4-7). This section of Road 26 lies within the Skagit Wild and Scenic River Corridor, and there is a need to restore access to numerous recreation opportunities, including Buck Creek and Sulphur Creek campgrounds, seven trailheads, two lookouts, and to private property owned by heirs of Jimmie Price (member(s) of the Sauk-Suiattle Indian Tribe).

The Suiattle Road 26 is a major portal to the Glacier Peak Wilderness and the Pacific Crest Trail. Commercial outfitter guides use Suiattle Road 26 to provide rafting adventures on the Suiattle River, and is used by the public for 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.

There is a need to restore vehicle access for Forest Service staff to access and manage campgrounds, recreation sites, and other facilities. The Forest Service uses Green Mountain Horse Pasture as an administrative site and project heliport. Vehicle access is needed for Forest Service law enforcement officers, fire prevention patrols, and other personnel attend to public safety, regulatory compliance, and maintenance of National Forest recreational sites and roads.

Since the Preliminary EA was released for the 30-day comment period: Forest Service engineers and specialists have continued to fine-tune the design of the proposed road repairs. The proposed action has been updated to the preferred alternative C including updated details.

Desired Road Condition

The first 10 miles of Suiattle Road 26 is a paved double-lane road; however, the last 13 miles are a single lane, gravel-surface road with turn-outs. The Forest Plan shows this last segment of the Suiattle Road 26 as Traffic Service Level B, which is a major arterial road generally congested during heavy traffic, has mixed vehicle types, high priority for safety, and the road surface is stable.

The MBS Forest-wide Roads Analysis (USDA Forest Service 2003) identifies the Suiattle Road 26 as a ***High Need*** road for recreation because it provides access to two campgrounds, seven trailheads, two lookouts, and the Suiattle Guard Station cabin rental. However, this road is also rated as a High-Risk road for wildlife resources. The current operational maintenance level and the proposed maintenance level of the Suiattle Road 26 past MP 9.8 is Level 4: useable by all vehicle

types, constant or intermittent aggregate surface, and user comfort and convenience a moderate priority.

There is a need to repair the flood damage on Suiattle Road 26 at mileposts 14.4 (**Site #1**), 21.9 (at Downey Creek Bridge (**Site #2**), and 22.9 at Sulphur Creek Bridge (**Site #3**). There is a need to restore motorized access to a standard consistent with the Forest Plan (Arterial Road, Service Level B) and consistent with the current road management objectives and Maintenance Level 4, as per the Access and Travel Management Plan (noted in INFRA database, USDA Forest Service 1995).[1] There is a need to complete the repair within the timeframe, funding, and stipulations of Emergency Relief for Federally Owned Roads program (ERFO).[2]

The proposed action would meet the goals and objectives outlined in the Forest Plan, managing the transportation system at the minimum standard needed to support planned uses and activities, and provide for public safety (USDA Forest Service 1990, p. 4-7). There is a high need for access for recreation to two campgrounds, seven trailheads, two lookouts, and the Suiattle Guard Station cabin rental (Roads Analysis, USDA Forest Service 2003, and Suiattle Watershed Analysis (USDA Forest Service 2004, pg 3-11).

Proposed Action

This alternative proposes to restore vehicle access to the Suiattle drainage by repairing the three damage sites. The repairs would be located further away from the river and streams than they were before the flood. Any additional rock needed would come from commercial sources.

Site #1 MP 14.4: The new road would be located approximately 60 to 125 feet further from the Suiattle River and outside of the banks of the Wild and Scenic River. The temporary road (about 400 feet in length) along the river would be removed. The beginning section of the Huckleberry Trail would be obliterated by the road relocation in order for a new a trail (about 1,400 feet) to be constructed from the trailhead, tying into the existing trail further upslope. The Huckleberry Trailhead (parking lot and road entrance) would be reconfigured to use a portion of the existing road. See drawing in Appendix B.

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 48-inch culvert (100-year flood capacity) in the non fish-bearing stream. Excess excavated materials would be hauled to the rock pit located at MP 3.2 on Road 2680. Work would occur outside of the banks of the Suiattle Wild and Scenic River.

The relocation route would be about 600 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 would require the clearing of about 30 to 40 trees (24 inches in diameter to 73 inches) and other smaller trees and vegetation from approximately one acre. Some trees would be used to meet current or future instream or down woody debris objectives

1 Both the objective and operational level for Road 26 is Maintenance Level 4: constant or intermittent aggregate surface or paved, user comfort and convenience a moderate priority, for all vehicle types (USDA Forest Service 2003).
2 The ERFO program provides funding for the planning and repair of Federally-owned roads that have been damaged as a result of a natural disaster over a wide area or a catastrophic failure. Projects funded by ERFO monies are expected to be completed within a relatively short timeline.

within the riparian reserve. Three of the largest Douglas-fir trees would be left outside the clearing limits at Site #1 to meet down wood guidelines of the MBS Forest-wide Programmatic Wildlife Biological Assessment. The felled trees to be left would be placed in a location that would reduce vulnerability to firewood cutters. Excess trees would be stored at the Green Mountain Horse Pasture and used for administrative projects such as improved fish habitat, repairs, or to sell.

Site #2 MP 21.9 Downey Creek Bridge: A concrete faced retaining wall would be built at the edge of the Downey Creek Bridge deck and along the replaced road fill. 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. This design would enlarge the area for the channel under the bridge by another 17.5 feet and armor the road fill to reduce the risk of future erosion. Total width under the bridge would be about 85 feet (estimated bankfull channel width). All work would occur outside the wetted channel. An existing 48-inch culvert located before the bridge would be replaced with an eight-foot overflow relief culvert. The damaged railing would be repaired and the gravel road surfacing replaced. See drawing in Appendix B.

Site #3 MP 22.9 Sulphur Creek Bridge: 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 work would occur outside of the wetted channel. The damaged railing would be repaired or replaced. See drawing in Appendix B.

Project Scope

The scope of the project includes analyzing the damage and proposed repairs to the Suiattle Road 26 at Site #1 (MP 14.4), Site #2 (MP 21.9), and Site #3 (MP 22.9) in order to restore administrative and public vehicle access. Reanalyzing or changing recreation opportunities is outside the scope of this analysis; such as expanding campgrounds or constructing accessible trails. Construction of a trail tie for the Huckleberry Trail is included in the proposal, as a connected action. The beginning of the existing trail would be destroyed by the road relocation as proposed in Alternative C.

Staffs on the Darrington Ranger District are concurrently analyzing several other road systems that sustained damage in the October 2003 floods. As discussed on page 2, a Forest Service team determined that the scattered road damage repairs constitute similar, but not connected actions (see definitions, below). Therefore, for the purposes of site-specific analysis required by NEPA, the damaged sites were grouped by road system into logical geographic areas, to address the site-specific problems or need for action.

The rationale for analyzing the road damage separately, rather than in a single analysis and document, is that the actions are similar in scope but are not considered to be connected actions because to repair or not repair any one road system would be independent of use of the other road systems being analyzed. The preliminary estimates of impacts of the repair /no repair options were not viewed as having significant effects or significant cumulative impacts. An Environmental Impact Statement (EIS) is required when there are significant effects. The Responsible Official

(District Ranger) makes the decision whether there are significant effects or whether an EIS is needed.

The Council on Environmental Quality (CEQ) defines "similar actions" and "connected actions " as follows: "[s]imilar actions" are those that when viewed with other reasonably foreseeable or proposed agency actions have similarities that provide a basis for evaluating their environmental impacts together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable Alternatives to such actions is to treat them in a single impact statement. "Connected actions" are those that automatically trigger other actions that may require EISs, cannot proceed unless other actions are taken previously or simultaneously, or are interdependent parts of a larger action and depend on the larger action for justification (CEQ Regulations, 40 CFR 1508.25 (a)(3)). [emphasis added]

Decision to Be Made

The District Ranger (Responsible Official) will decide whether or not to repair the road and, if so, by what means, and what mitigation measures and monitoring are to be implemented.

Relationship to Forest Plan and Other Documents

This project 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, UDSI Bureau of Land Management 2001), as reinstated by U.S. District Court Order (January 9, 2006), as the ROD was amended or modified as of March 21, 2004[3]; and
- The 1990 Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan (as amended), provides management direction for National Forest System lands within the project area. Direction is provided in the form of goals and 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."

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

[3] *This same Court Order set aside the 2004 ROD, which removed/modified the survey and manage mitigation measure standards and guidelines.*

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:

All damage sites are within Riparian Reserve and Skagit Wild and Scenic River.

Riparian Reserve

Includes areas 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, pg C-1, 32-33).

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, pg 4). The Skagit Wild and Scenic River is considered part of the matrix, as timber harvest is allowed in Recreation and Scenic segments.

Relevant Goals, Standards and Guidelines

The following includes goals, standards and guidelines from the Forest Plan, as amended, are most applicable to the repair of Road 26. However, all applicable goals, and standards and guidelines 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, pg 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, pg C-7).
- Key Watersheds are highest priority for watershed restoration (1994, pg 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, pg 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, pg C-32), and b) restricting side-casting as necessary to prevent introduction of sediment to streams (1994, pg 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, pg 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, pg 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, pg 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***[4]**:**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 Laws and Direction

National Environmental Policy Act

This environmental assessment has been prepared in accordance with regulations established under the National Environmental Policy Act of 1969 (NEPA).

Wild and Scenic River Act

Section 703 of Public Law 90-625 amended the 1968 Wild and Scenic Rivers Act t to designate selected segments of the Skagit, Cascades, Sauk, and Suiattle Rivers to the National Wild and Scenic River System (WSR). The Outstandingly Remarkable Values of the Skagit River System are fisheries, wildlife, and scenic quality (USDA Forest Service1983). Designated rivers are classified as either: wild, scenic, and recreational depending on the type and intensity of development. The mainstem Suiattle River segment is a 27.4-miles long and is classified as scenic, which is defined as "free of impoundments, with shorelines or watersheds still largely primitive and largely undeveloped, but accessible by road in places."

Evaluation of water resources projects within the National Forest System is addressed in the Wild and Scenic Rivers Act (82 Stat. 906, as amended; 16 U.S.C. 1271 (Note), 1271-1287). Section 7 of the Act provides authority to the Secretary of Agriculture to evaluate and make a determination on water resource projects that affect wild and scenic rivers. Section 7(a) prohibits departments and agencies of the United States from assisting in the construction of any water resources project that

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

". . . would have a direct and adverse effect on the values for which such a river was established". Water resources projects are those proposed activities that are federally assisted and within the bed and bank of a wild and scenic river.

Implementing rules to guide evaluation of proposed water resource projects are at Title 36, Code of Federal Regulations Part 297 (36 CFR 297). Additionally, the Forest Service must comply with the Interagency Guidelines for Eligibility, Classification, and Management of River Areas, published in the Federal Register on September 7, 1982 (47 FR 39454). Forest Service Manual 2354.76, details the process for conducting the Section 7 determination.

Endangered Species Act

Section 7 (a)(2) of the Endangered Species Act of 1973 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 listed critical habitat The Forest Service consults with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) if projects could potentially affect listed species or critical habitat. The Forest currently has three programmatic consultation documents with these regulatory agencies that cover most of the Forest's program of activities for several years.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act as amended by the Sustainable Fisheries Act of 1996, requires Federal action agencies to consult with the Secretary of Commerce (NMFS) regarding certain actions. Consultation is required for any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH) for species managed in Federal Fishery Management Plans. For this project, the Pacific Coastal Salmon Plan manages for chinook, coho, and pink salmon. According to EFH regulations, 50 CFR section 600.920(a)(1), EFH consultations are not required for completed actions or project-specific actions with a signed decision under the National Environmental Policy Act, and these regulations enable Federal agencies to use existing consultation and environmental review procedures to satisfy EFH consultation requirements.

National Historic Preservation Act

The National Historic Preservation Act of 1966, Executive Order 11593, 36 CFR 800.9 (Protection of Historic Properties), Section 106 requires documentation of a determination of whether each undertaking would affect historic properties. The Mt. Baker-Snoqualmie National Forest operates under a programmatic agreement between the Washington State Historic Preservation Officer and the Advisory Council on Historic Preservation for consultation on project determination.

Clean Air Act

The Clean Air Act Amendments of 1977 gives federal land managers an affirmative responsibility to protect the air quality related values (including visibility) within Class 1 areas.

Wilderness areas are designated as Class 1 areas for air quality protection. Visibility is a value that is protected primarily within the boundaries of a Class 1 area, although the Clean Air Act includes provision for definition of vistas integral to a visitor's experience, even if these vistas extend beyond the boundaries of the Class 1 area.

Clean Water Act

The Clean Water Act (CWA) of 1977 and subsequent amendments, established the basic structure for regulating discharges of pollutants into the waters of the United States. It gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs, and to set water quality standards for all contaminants in surface waters. The Act makes it unlawful for any person to discharge any pollutant into waters of the United States, unless a permit has been obtained under its provisions. The EPA delegated implementation of the CWA to the States; the State of Washington recognizes the Forest Service as the Designated Management Agency for meeting CWA requirements on National Forest System lands.

Section 303(d) of the federal Clean Water Act requires Washington State (Department of Ecology) to periodically prepare a list of all surface waters where pollutants have impaired the beneficial uses of water (for drinking, recreation, aquatic habitats, etc.). Types of pollutants included high temperatures, fecal coliform, excess nutrients, low levels of dissolved oxygen, and toxic substances. The current Washington State list for these Water Quality Limited Waterbodies is dated 1998; a new list is in preparation but has not yet been approved by the EPA. The Forest Service Region 6 and the Washington State Department of Ecology meet this management mandate under a Memorandum of Agreement (MOA) with emphasis on reducing effects of roads on water quality.

Executive Orders 11988 (Floodplains) and 11990 (Wetlands)

The purpose of these orders are to "…avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development…" and "avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands…"

Private Property Access (ANILCA)

The Alaska National Interest Lands Conservation Act (ANILCA) of December 2, 1980 (P.L. 96-487), Title XII; 94 Stat. 2457; 16 U.S.C. 3210) is not limited to the State of Alaska but has nationwide application to National Forest System lands.

Sec. 1323. (a) Notwithstanding any other provisions of law, and subject to such terms and conditions as the Secretary of Agriculture may prescribe, the Secretary shall provide such access to nonfederally owned land within the boundaries of the National Forest System as the Secretary deems adequate to secure to the owner the reasonable use and enjoyment thereof: Provided, That such owner comply with rules and regulations applicable to ingress and egress to or from the National Forest System.

Invasive Species 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 Mediated Agreement of May 24, 1989, 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 include cleaning of construction equipment, prompt re-vegetation of disturbed sites, and treatment of known weed sites before they become larger. These measures come from the Forest Plan, as

amended, Forest-wide Standards and Guidelines Prevention Strategies and Best Management Practices (BMPs) for noxious weeds (Forest Plan Amendment #14, 1999).

A Record of Decision has been signed for the Pacific Northwest Region Invasive Plant Program: Preventing and Managing Invasive Plants, Final Environmental Impact Statement (USDA October 2005). To date (January 2006), this decision is under administrative appeal: however, the management direction will be implemented over a period of time, with some standards applicable starting in March 2006. The goals and standards included in this ROD complement the MBS Prevention Strategies and Best Management Practices (Forest-wide Standards and Guideline) for noxious weeds.

Roads Analysis

Forest-wide roads analysis, a process used to inform decisions related to road management, has been completed: Mt. Baker-Snoqualmie National Forest Roads Analysis, July 2003. Roads analysis is not a decision-making process but it assess Forest transportation management needs, long-term funding, and expected ecosystem, social, and economic effects. Each road segment on the Forest was assessed for both access need (e.g. needed for recreation, vegetation management, etc.) and by concern for resource damage. This information can be used to provide the responsible official with critical information needed to identify and manage the Forest road system.

Watershed Analysis[5]

Watershed analysis has been completed for the Suiattle River Watershed (USDA Forest Service 2004). The Suiattle River Watershed Analysis (Suiattle WA) provides a landscape level or ecosystem perspective with findings and recommendations that give the context for road management within the watershed. The findings of the watershed analysis are incorporated into this environmental assessment by reference. The proposed action is located within a Tier 1 Key Watershed. These watersheds are defined as sources for high water quality and contain at-risk anadromous fish (e.g., salmon) (1994 ROD p.10).

ERFO (Emergency Relief for Federally Owned Roads)

This program is designed to help pay the unusually high cost of maintenance and repair caused by a natural disaster over a wide area. Funds are managed by the Federal Highway Administration and are allocated to each flood damage site. (Emergency Relief for Federally Owned Roads Disaster Assistance Manual, FHWA-FLH-04-007, page 1-6).

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5 Forest Plan, as amended, standards and guidelines for Key Watersheds require completion of watershed analysis prior to management activities other than minor activities (USDA, USDI 1994, page C-7.

Figure 2: Suiattle Road 26 Repair Map

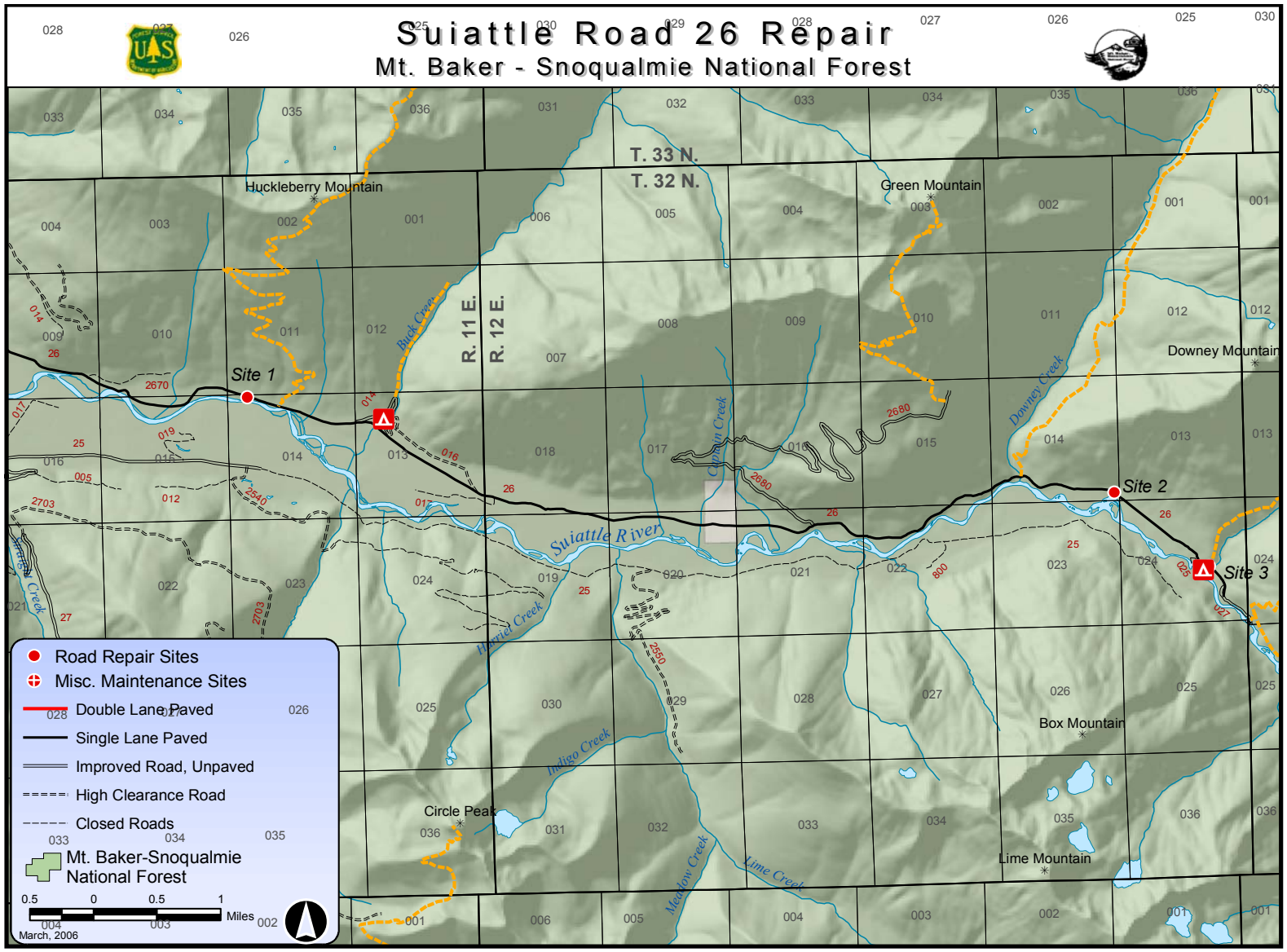

Figure 3: Merged Land Allocation Map

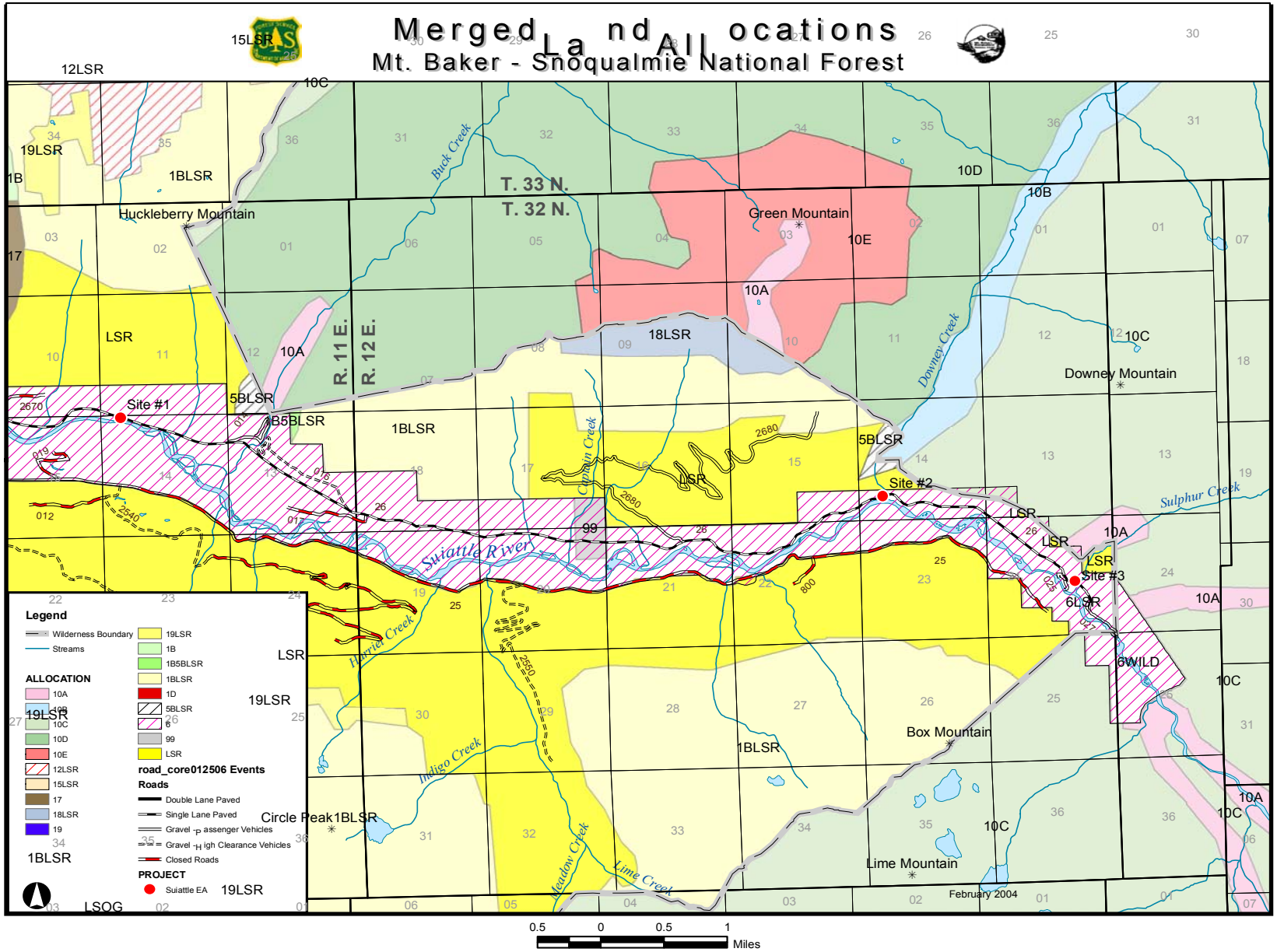

Table 1: Land Allocation Map Legend

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	

Public Involvement

Following the floods of 2003, a damage assessment was conducted by the Darrington Ranger District to discover which roads (if any) needed repair. Through this assessment, it was discovered that several roads had been damaged by high water by various rivers and streams. Once the assessment had been completed, the Darrington Ranger District began developing a proposed action for the repair of these roads. The District Ranger initiated government-to-government consultation with federally recognized tribes, including the Sauk-Suiattle, Nooksack, Lummi, Samish, Snoqualmie, Skagit, Swinomish, Stillaguamish, and Tulalip tribal councils.

Following the development of the proposed action, scoping letters (dated February 6 and 9, 2004) were mailed to 457 groups, individuals, and organizations. With this mailing, rather than sending out individual letters for each project, all of the proposed road repair projects were combined into one letter. In these letters, if various recipients wished to respond, they were asked to submit scoping comments to the listed contacts by March 5, 2004. The following groups and individuals responded with comments on the proposed Suiattle Road 26 Repairs.

Table 2: Scoping Period Commenters

Katherine Johnson, Pilchuck Audubon Society	Marc Bardsley, North Cascades Conservation Council
Connie Kelleher, American Rivers	Thomas C. O'Keefe, American Whitewater
Jim Scarborough, Individual	Eric Myren and Nancy Douty, Washington Recreational River Runners
Bob Boyd, Individual	Paul Wagner, Individual
Mike Torok, Individual	Phil Leatherman, Individual
Steve Hinton and Devin Smith, Skagit River System Cooperative	Chris Detrick, Washington State Department of Fish and Wildlife
Matt Riggen, Individual	Mike and Ruth Hardy, Individuals
Michael Andreoni and Val Brown, Individuals	Dale Wick, Individual
Shari Brewer, Off the Beaten Path	

Twenty-nine articles regarding the flood damaged roads, trails, and meetings appeared in the Everett Herald, Seattle PI, Tacoma News Tribune, Marysville Globe, Lake Stevens Journal, and Seattle Times newspapers. These articles described the various road projects and whom to contact concerning individual projects. By the end of the scoping period, 17 letters and e-mails had been received specific to the Suiattle Road 26 Repair.

During the month of May 2004, two public meetings were held. The first meeting was held in Darrington on May 6, 2004, and the second meeting was held at the Mountlake Terrace Supervisors Office on May 18, 2004. A total of 50 people attending these two meetings and several people provided their name and address so that they could receive further information. Forest Service staff also made presentations to various groups about the flood damage throughout 2004. The Forest Service also used the Forest web site (http://www.fs.fed.us/r6/mbs/projects/flood-damage-roads/index.shtml) to share information on flood damage, proposed repairs, and contacts.

Five interested individuals and four organizations submitted substantive comments during the 30-day comment period May 12 to June 13, 2005. The ID Team considered these comments to obtain useful information from individuals, and use it to enhance project analysis and project planning as per the Supplementary Information for the final rule for Notice, Comment, and Appeal Procedures as published in the Federal Register, 36 CFR Part 215 RIN 0596-AB89, and effective June 4, 2003.Substantive comments were either addressed individually and/or the information was used in developing the final EA. The Chapter 4 Table 21: Public Comments 30-Day Comment Period summarizes the substantive comments and responses by the Forest Service.

Issues

Identifying the significant issues provides focus for the analysis. Significant issues are used to develop alternatives to the proposed action, prescribe management requirements and constraints, mitigation measures, and in analyzing environmental effects. Using the comments from the public, other government agencies, and tribes, the ID team developed a preliminary list of issues, separating them into two groups: significant and non-significant issues. The significant issues are those directly, indirectly influenced, or impacted by implementing the proposed action and are described below. Non-significant issues are: 1) those outside the scope of the proposed action; 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[6]. Chapter 4 Table 22: Scoping Comments identifies substantive public comments that were considered in developing the following significant issues. It also includes other public comments that were considered as non-significant issues. Twenty-nine comments were provided from the seventeen scoping respondents.

- Seven comments refer to restoring access quickly to recreation sites and were used to develop issue;
- Four comments identified the risk and cost of current and future repairs and were used to develop issue 2;
- Six comments identified concerns for impacts to fish habitat and were used to develop issue 4;
- Two comments were concerned with the removal of old growth and were used to develop issue 5;
- Issue 3 was developed through internal scoping;
- Seven comments requested that the road be decommissioned or converted to a trail, but this action did not meet the purpose and need of the project so was not a significant issue for the proposed action and is described in Alternatives Considered but Eliminated from Detailed Study on page 21;
- Two of the comments on fish habitat also asked that the Downey Bridge be extended and this is included in Alternatives Considered but Eliminated from Detailed Study on page 22;

6 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)…"

- One comment said to evaluate all road repair projects in one EIS and this was not a significant issue to help develop issues and is discussed in Project Scope on page; and
- Another comment was about local small contractors getting the repair contracts and that is outside the scope of this decision.

The Responsible Official, District Ranger Terry Skorheim, retired, and Jon Vanderheyden, interim, identified the following significant or key issues raised for this proposed project and the measures developed:

Restore vehicle access to trails, campgrounds, and other uses.

The purpose and need for the proposed repairs is to restore vehicle access to recreation opportunities and to meet the desired condition for Suiattle Road 26 as a major arterial road.

Measures or Indicators:

- Boat launch sites accessible by vehicle (number of sites);
- Trailheads (number and 1998-2003 average use days at 83% compliance rate) that can be access by vehicles;
- Developed recreation sites (number and use days) that can be accessed by vehicles;
- Miles of drivable road available for scenic driving, berry picking and other roaded dispersed recreation from Site #1; and
- Miles of drivable road available for emergency response and administrative use from Site #1.

The proposed repairs may be expensive as well as future maintenance and repairs due to the risk of future road washouts.

In the past, the Suiattle River has damaged Road 26 repeatedly and the risk of future damage remains high, as the road is located within the floodplain of the river. Road 26 is the main Forest arterial into the Suiattle River system. Over the documented 30-year flood history (1974-2004), seven road sites have had repeated failures. Of the three current damage sites, only Site #3 at Sulphur Creek has been damaged previously.

Because of this history of flood damage, the Forest has spent considerable time and resources on road flood-proofing and upgrading. Small culverts have been replaced with larger culverts (23 sites). At a couple of sites, the road prism has been realigned or re-routed to move it further from the river. No previous flood damage has occurred at Site #1 or at Site #2. There is concern that the road would fail again in the next large flood, particularly if the road is replaced in the same location and using the same designs and techniques as in the past and that the repairs may be expensive as well as the cost of future maintenance and repairs.

Measures or Indicators:

- Cost ($) 0f repairs by alternative;
- Cost ($) of future maintenance; and
- Distance (feet) of repair from active channel and risk of future washouts that would prevent access.

The proposed repairs may impact the values of the Wild & Scenic River – free-flow, scenic quality, fisheries (covered in item 4), and wildlife (covered in item 5).

- The repair sites are located within a segment of the Skagit Wild and Scenic River System. The Suiattle River is classified as Scenic (USDA Forest Service 1990 page 4-196). Prior to the October 2003 flood, the Suiattle River flowed west of Site #1. During the flood event, the river moved towards Road 26 and washed out a portion of the road at Site #1. At Site #1, the river channel is adjacent to the remaining road. There is concern that the proposed repairs may encroach on the active river channel and affect the free flowing characteristics of the Suiattle River.

Measures or Indicators:

- The effects of the proposed activity on conditions of free-flow, and water quality (Repairs within the bed and bank and distance of road from the channel).
- Any direct and adverse effects on the outstandingly remarkable and other significant resource values,

The proposed repairs may impact fish habitat and Riparian Reserves.

All of the repair sites on the Suiattle Road 26 may affect habitat for threatened or endangered fish species through the introduction of additional sediment into the streams and river from exposing bare soil next to them. The road approach fills at Downey (Site #2) and Sulphur (Site #3) Creek Bridges are within the bankfull channel and are constricting flows during high water events.

Measures or Indicators:

- Amount of sediment produced by repairs (cubic yards); and
- Distance (feet) of road structure from the bank-full channel width of Downey and Sulphur Creeks and the Suiattle River.
- Amount (acres) of riparian vegetation removed.

The proposed repairs may impact old growth (by Huckleberry Mountain Trail) and spotted owl and marbled murrelet and habitat.

- Proposed relocation of Road 26 away from the river at Site #1 would require removal of large trees and is within designated critical habitat for spotted owl and marbled murrelet. Removal of these trees may affect spotted owls or marbled murrelet or their habitat.

Measures or Indicators:

- Number and size (diameter in inches) of trees removed; and
- Amount of spotted owl or murrelet nesting habitat removed (acres).

Chapter 2 Alternatives

Introduction

The initial assessment of the repairs and the estimated funding required to repair flood damage was determined through the Federal Highways Administration. Once the Federal Highways Administration finished their input, the individual Interdisciplinary (ID) Teams collated all known information, and developed and refined the proposed action. The Responsible Officials (District Ranger Terry Skorheim, retired, and Jon Vanderheyden, interim District Ranger) approved the proposed action and its alternatives as well as the issues identified in the previous chapter.

This chapter describes and compares the three alternatives considered for this project. This section also presents the alternatives in comparative form, displaying the differences between each alternative and providing a basis for choice among options by the decision maker and public.

Process Used to Formulate the Alternatives

In January 2004, Acting Forest Supervisor Robert Iwamoto chartered a team to examine the damages and the possible repairs to the Suiattle Road 26 and to present the responsible official with the proposed action and alternatives to it, to return access to the area and meet the need for action.

The ID Team assessed the existing conditions for the damaged Road 26 as well as surrounding lands that could be affected by the proposed project. The team compared the existing condition to desired future conditions for the area, as established by the Forest Plan. The team also examined findings from the Suiattle Watershed Analysis (USDA Forest Service 2004), the Forest Roads Analysis (USDA Forest Service 2003) and other laws, regulations, and direction.

Early public participation produced substantive comments from interested organizations and individuals. The ID Team reviewed each comment and used this input, issues identified at team meetings, and internal (agency) scoping to identify key issues (described in Chapter 1). These comments were used, in combination with the stated purpose and need for action, to formulate alternatives, design criteria, and monitoring plans.

The No Action Alternative is required (40 CFR 1502.14d). This alternative is used as a baseline to compare the action Alternatives, although it does not meet the purpose and need for action. No action is defined as no change from current management. Current projects and activities would continue, however the stated purpose and need described in Chapter 1 would not be achieved.

All proposed actions would meet existing laws, regulations, and policies. All known threatened, endangered, sensitive, survey and manage plant or animal species would be assessed for potential adverse impacts, and conservation measures from the Biological Assessment and Biological Opinion would be used to minimize potential impacts. Wetlands would not be adversely

impacted. Cultural resources would be protected in accordance with the National Historic Preservation Act, Executive Order 11593, and other legislation and policy[7].

Alternatives Considered but Eliminated from Detailed Study

The purpose and need for the proposed action is to restore vehicle access for recreation and administration use. The Suiattle Road 26 is a major arterial road with the Operational Maintenance Level (ML) of this section as ML4 (high level, suitable for passenger cars, mixed use, see Purpose and Need on page 3). Vehicle access needs to be restored to Sulphur Creek Campground and Suiattle and Downey Trailheads. 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 is 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. This would include expanding campgrounds and constructing more accessible trails. The following alternatives were considered, but were not studied in detail.

Rebuild Site #1 (MP 14.4) in the Original Location

The alternative would rebuild the road in the same location as in the past. If this were to occur, road fill material would be dumped into the newly eroded river channel. This action would place fill within the ordinary high water mark of the Suiattle River. Riprap would be placed along this road fill and within the riverbed. This alternative was not studied in detail because it would be very susceptible to repeated future washouts and it would have an adverse effect on the free-flowing characteristics of the Wild and Scenic River. This alternative would not comply with the Wild and Scenic River standards and guidelines.

Decommission or Convert to Trail

Decommissioning Suiattle Road 26 or converting the road to trail at Site # 1 or Site #2 were considered, but were not studied in detail because these activities would not contribute toward the purpose and need to restore vehicle access (Page 1). Decommissioning or converting the road to trail would also 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 30), which is to maintain the road as a major arterial road for mixed vehicles.

In response to comments received during the 30-day comment period:

A few respondents were adamant about analyzing an alternative that would decommission the road or convert it to a trail because the road had been washed out before and may be washed out in the future.

Response: *The alternatives in this document use different strategies and designs than those of the past to aid in preventing future washouts in these locations. There are other road sites that have not used these strategies and are, therefore, still susceptible to future washouts. More information has been added to Chapter 3 Environmental Consequences on the potential for future washouts. More information on costs of decommissioning and converting to trail has been added below.*

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7 As part of Alternative B and C, Surveys for Threatened, Endangered, or Sensitive Plants and Animals and Proposed Endangered, Threatened, or Sensitive Species or Survey and Manage Species were not conducted. If suitable habitat is present, timing restrictions are incorporated to protect any species that may be present.
All activities implemented as a result of the action Alternatives would be in compliance with the National Historic Preservation Act of 1966, Executive Order 11593, 36 CFR 800.9 (see page 10).

In addition, conversion of a road to trail is costly. Construction methods would include laying back cut banks and moving that material to allow for recontouring the slope. Vegetation would be left in place as much as possible to achieve a natural look. A stock suitable trail would be left in place of the roadbed. The existing bridges would be used for the trail and the washed out approaches restored. The cost estimate for road to trail conversions, with culvert embankments not exceeding five feet in height, is $20,000 per mile with seeding. Embankments over five feet in height would cost an additional $2,500 and there are an estimated two sites per mile. Mulching with two to four-inch thick weed free straw mulch averaging 30 feet in width is another $20,000 per mile. The cost estimate to decommission a road is $15,000 per mile plus $2,500 additional for each large embankment with an estimated cost of $15,000 per mile for mulching. The estimated cost to remove a bridge is $40,000. The total mileage of all roads past MP 14.4 is 17.52 and the total road mileage past Downey Creek MP 21.9 is 3.3. The following table displays some estimated costs for each option.

Table 3: Costs to Decommission or Convert to Trail

Cost Item	Convert to Trail at MP 14.4	Convert to Trail at Downey	Decommission at MP 14.4	Decommission at Downey
$20,000 per mile convert to trail	$350,400.	$66,000.		
$15,000 per mile decommission			$262,800.	$49,500
$2,500 per large fill and culvert	$50,000.	$17,500	$50,000.	$17,500
$15-20,000 per mile mulching	$350,000.	$66,000	$262,800	$49,500
$40,000 each bridge removal			$80,000.	$80,000
Fix MP 14.4 and Downey ramp	$20,000	$100,000		$80,000
Total	**$770,400**	**$249,500**	**$655,600.**	**$276,500.**

Decommissioning or converting the existing road into a trail from MP 14.4 would disturb the ground for 17.52 miles, which is about 64 acres. Disturbing the 3.3 miles of road from Downey Creek would be about 12 acres. These actions would also have much more sedimentation potential than the proposed action, as there would be a much larger number of culverts and fill dug up as well as acres of ground disturbed.

Downey Creek Additional Bridge Extension

In response to comments received during the 30-day comment period, additional information was added for this alternative.

One other design at Site #2 was considered, but eliminated from detailed study. This alternative included extending the Downey Creek Bridge by adding a bridge span or spans of similar dimension to the end of the existing bridge and remove the over flow culvert and all road fill and riprap. The current bridge design, without another bridge extension, is sufficient because it would accommodate an expected 100-year flood event. This meets the standards and guidelines for Riparian Reserves under RF-4, page C-33 “New culverts, bridges and other stream crossing shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a

substantial risk to riparian conditions would be improved to accommodate at least the 100-year flood, including associated bedload and debris."

Alternatives Considered in Detail

The No Action Alternative and two action alternatives were studied in detail. Engineering sketches of the proposed repairs are located in Appendix B.

Alternative A No Action

Under Alternative A (no action), no repairs to the three damage sites would be made. Implementing Alternative A for this project would not preclude other projects such as the Suiattle Trail repair contract or the Milk Creek Trail Suiattle Bridge replacement contract.

Site #1 MP 14.4: The temporary road at Site #1 would remain at current level 2 standards (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 #1 would no longer meet its designated service and maintenance level (ML) 4 standard. Without any repairs at Site #1, there is a high risk that the Suiattle River would washout and close the road there (ML1 for the remaining nine miles plus an additional nine miles of other roads would be inaccessible) at some time in the near future (estimated within five years). 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 with the potential to undermine this section of the road and without repair it is likely to fail. There would be no additional changes to the Huckleberry Mountain Trail or trailhead.

Site #2 MP 21.9: There would not be any repair of the road approach to the Downey Creek Bridge. This would leave the two miles of road beyond, closed to vehicles (ML 1). Sulphur Creek Campground, Suiattle Trailhead, and Downey Creek Trailheads would remain inaccessible to vehicles. The road would remain blocked with concrete barrier before Downey Creek where the current turn-around area is located.

Site #3 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).

Alternative B Repair in Place

This alternative proposes to restore access to the Suiattle drainage by repairing the damage sites similar to pre-flood conditions except that at Site #1 the repair would occur on the current temporary road location outside of the river channel. Additional rock needs would come from commercial sources.

Site #1 MP 14.4: The temporary road would be improved to meet passenger car standards. The road would be reinforced by burying riprap in an excavated trench under the road and by widening and smoothing the road. To prevent further road damage at this site, the current road route would be reinforced with riprap 20-feet deep and 20-feet wide, under the road. The road would then be built on top of this riprap. This work would occur outside of the bank of the Suiattle Wild and Scenic River. A 48-inch (100-year flood capacity) culvert would replace the existing culvert in the non fish-bearing stream crossing. See drawing in Appendix B.

Site #2 MP 21.9: The damaged approach to the Downey Creek Bridge would be excavated and rebuilt. Road fill and gravel surfacing would be replaced and armored with riprap to protect the fill and bridge pier. The damaged guardrails on both sides of the approach would be replaced. The existing 48-inch relief culvert would be retained. This repair would require the following estimated quantities of rock materials: 2,200 cubic yard of fill, 600 cubic yards of riprap, and 70 cubic yards of gravel. See drawing in Appendix B.

Site #3 MP 22.9: The lost road fill and riprap at the approach to the Sulphur Creek Bridge and the damaged railing would be replaced. This repair would require an estimated 400 cubic yards of excavation and would include the following rock materials: 100 cubic yards of fill (pit-run borrow) and 100 cubic yards of riprap. See drawing in Appendix B.

Alternative C Move Roads Back (Preferred)

This alternative proposes to restore vehicle access to the Suiattle drainage by repairing the damage sites. The repaired road would be located further away from the river and streams than before the flood. Any additional rock needed would come from commercial sources.

Site #1 MP 14.4: The new road would be located approximately 60 to 125 feet further from the Suiattle River and outside of the banks of the Wild and Scenic River. The temporary road (about 400 feet) along the river would be removed. The beginning section of the Huckleberry Trail would be obliterated by the road relocation so new trail (about 1400 feet) would be constructed from the trailhead to tie into the existing trail further upslope. The Huckleberry Trailhead (parking lot and road entrance) would be reconfigured to use a portion of the existing road (see drawing in Appendix B).

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 48-inch culvert (100-year flood capacity) in the non fish-bearing stream. Excess excavated materials would be hauled to the rock pit located at MP 3.2 on Road 2680. Work would occur outside of the banks of the Suiattle Wild and Scenic River.

The relocation route would be about 600 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 would require the clearing of about 30 to 40 trees (24 inches in diameter to 73 inches) and other smaller trees and vegetation from approximately one acre. Some trees would be used to meet current or future instream or down woody debris objectives within the riparian reserve. Three of the largest Douglas-fir trees would be left outside the clearing limits at the MP 14.4 site to meet “down wood” guidelines of the MBS Forest-wide Programmatic Wildlife Biological Assessment. The felled trees to be left would be placed in a location that would reduce vulnerability to firewood cutters. Excess trees would be stored at the Green Mountain Horse Pasture to be used for administrative uses such as fish projects, flood repairs, or could be sold. The estimated trees to be removed and diameter at breast height (dbh) are displayed in Table 4.

Table 4: Alternative C Tree Removal Estimates

Species	24-29 inch	30-39 inch	40-49 inch	50-59 inch	60-69 inch	70-75 inch	Total
Douglas-fir	0	4	8	3	0	1	16
Western red cedar	0	6	2	0	0	0	8
Western hemlock	2	3	1	0	0	0	6
Big-leaf maple	3	0	0	0	0	0	3
Cottonwood	0	1	0	0	0	0	1
Total	5	14	11	3	0	1	34

Site #2 MP 21.9: A concrete faced retaining wall would be built at the edge of the Downey Creek Bridge deck and along the replaced road fill. 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. This design would enlarge the area for the channel under the bridge by another 17.5 feet and armor the road fill to reduce the risk of future erosion. Total width under the bridge would be about 85 feet (estimated bankfull channel width). All work would occur outside the wetted channel. An existing 48-inch culvert located west of the bridge would be replaced with an eight-foot overflow relief culvert. The damaged railing would be repaired and the gravel road surfacing replaced. See drawing in Appendix B.

Site #3 MP 22.9: 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 and placing a portion of this for 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 work would occur outside of the wetted channel. The damaged railing would be repaired or replaced. See drawing in Appendix B.

Mitigation Measures for Both Alternatives B and C

Fisheries, Hydrology, Riparian Reserve

Mitigation measures used are from the Standards and Guidelines in the ROD (USDA Forest Service 1994), Conservation Measures from the USFWS Letter of Concurrence (USDI FWS 2004), and the Conservation Management Practices, Terms and Conditions, and essential fish habitat Conservation Recommendations from the NMFS Biological Opinion (USDC NMFS 2003). Effectiveness of these measures is discussed in these documents in relation to species-specific measures or site-specific measures. The evaluation of effectiveness of the measures is assessed in relation to the nature of the effect, the timing of the effect, proximity of the effects, disturbance potential (frequency, intensity, and severity) and in the distribution of impacts. Conservation measures and best management practices would be effective, based on experience gained from previous projects. Pertinent standards and practices are listed here. The complete list of measures from the documents identified above is in the analysis file at the Darrington Ranger District.

1. Roads would be minimized in Riparian Reserves; location, design, and (re)construction of necessary crossings should be based on methods that minimize disruption to natural hydrologic paths and adverse effects to aquatic resources, including avoiding sidecasting of loose material; new permanent stream crossings would accommodate at least the 100-year flood, including associated bedload and debris.
2. Large woody material removed from an existing culvert inlet would be put back into the stream channel downstream of the culvert unless doing so would cause habitat degradation.
3. Construction activities in or adjacent to perennial streams would be conducted during summer low-flow season. Design, construction, and maintenance procedures to limit sediment delivery to streams from the road surface would be applied.
4. Outsloping of the roadway surface is preferred unless outsloping would increase sediment delivery to streams or where outsloping is infeasible. Road drainage would be routed away from potentially unstable channels and hillslopes.
5. Wastewater from project activities and water removed from within the work area shall be routed to an area landward of the ordinary high water line to allow removal of fine sediment and other contaminants prior to being discharged to the stream.
6. Erosion control methods would be used to prevent silt-laden water from entering the stream. Methods may include, but are not limited to straw bales, silt fencing, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas. Erosion control measures must be in place prior to the normal heavy rainfall period. Excess material shall be disposed of and stabilized so it does not enter stream channels or water bodies.
7. Repairs along all roads should be monitored during rainy periods and when soils are excessively wet, and work restricted as necessary to minimize the potential for downstream sedimentation.
8. To minimize effects to water quality, hazardous spill clean-up materials would be available on-site prior to starting work; any machinery maintenance involving potential contaminants (fuel, oil, hydraulic fluid, etc.) would occur at an approved site or outside the Riparian Reserve; prior to starting work each day, all machinery would be checked for leaks and all necessary repairs made.
9. Where project activities potentially affect the beds or banks of streams or other water bodies, provisions specified in the WDFW HPA for the project shall apply, including in-water timing periods.

Cultural Resources

1. Should previously unidentified heritage resources be discovered during project implementation, or if an identified resource is affected in an unanticipated way, the Heritage Specialist shall be notified and the Forest would fulfill its responsibilities within the Programmatic Agreement regarding Cultural Resource Management.

Botany

1. Equipment brought on to the National Forest must be free of weeds and weed seeds, and must be cleaned before leaving the site. Because the herb Robert infestation at Site #1 is confined to the area east of the stream, ground clearing should proceed from west to east (from uninfested to infested). All gravel, fill, and borrow materials must come from weed-free

sources. The stockpiled waste material would be monitored by the District Botanist, and any herb Robert germinants would be hand-pulled. Herb Robert is easily pulled, so this is an effective control measure. Weed free gravel and fill eliminates the possibility of introducing new weeds or weed seeds from off-site so this measure is highly effective. Vehicles are vectors for weed seed dispersal and carry seeds a much greater distance than they would normally travel. Cleaning the equipment is effective in eliminating this vector (Schmidt, 1989; Hodkinson and Thompson, 1997).

2. Abandoned roads would be seeded and mulched to deter the establishment of noxious weeds where there are significant portions of bare soil remaining. Fertilizer is not recommended. Seed and straw mulch must free of weeds and weed seeds. The mix to use consists of the following: soft white winter wheat (cultivar of Triticum aestivum) @ 50 lbs/acre; slender wheat grass (*Elymus trachycaulis*, aka, *Agropyron trachycaulus*) @ 20 lbs/acre; annual ryegrass (*Lolium multiflorum*) @ 20 lbs/acre; Austrian winter peas (*Pisum sativum arvense*) @ 5 lbs/acre; and the goal is 170 seeds per square foot. Native plant species are typically unable to out-compete invasive plants in disturbed habitats. Seeding and mulching disturbed sites with non-invasive seed mixes are effective in reducing the chance of noxious weeds gaining a foothold (USDA Forest Service 2004).

Wildlife

1. For Alternatives B and C, project work at the Site #1 would not occur after October 31 and before March 15 to minimize potential noise impacts to wintering eagles along the Suiattle River. Disturbance from noise could potentially affect wintering eagles through displacement or reduced foraging opportunity. This timing restriction would be effective in eliminating the potential for project noise disturbance during the eagle wintering period.
2. For Alternative C, tree felling at the Site #1 would not occur from March 1 to September 30 to minimize the risk of impacts to spotted owls or murrelets that potentially could be nesting at the site. This measure would be effective in preventing the possibility of felling a tree during the breeding season that might actually contain an active spotted owl or murrelet nest, thereby preventing nest destruction or direct mortality of young.
3. For Alternative C, three of the largest Douglas-fir trees cleared for the road relocation segment at the Site #1, would be left to meet down wood guidelines of the MBS Forest-wide Programmatic Wildlife Biological Assessment. The felled trees would be located in an area that would reduce vulnerability to firewood cutters. If necessary, trees would be marked with “no cutting” signs to discourage removal by firewood cutters. It is well documented that down logs provide a critical habitat element for dozens of wildlife species, and existing down wood levels would be augmented through this measure.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and issues where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 5: Comparison of Issue by Alternative

Issues (1)) and Measures (a.)	Alternative A No Action	Alternative B Repair in Place	Alternative C Move Back
1)Restore vehicle access			
a. Boat launch sites accessed by vehicles	0 – no access to Sulphur Creek or Downey (launch site on far side of bridge).	2-vehicle access to Sulphur and Downey restored. Moderate risk of future loss of access at MP 14.4.	2-same as Alt. B, but low risk of future loss of access at MP 14.4.
b. Trailheads (# and annual use days) accessed by vehicles	3-No vehicle access to Suiattle (1650) and Downey (350) Trailheads. High risk of future loss of access at MP 14.4 and to Green Mt.(1750) and Buck Trailheads.	5-vehicle access restored to Downey (350) and Suiattle (1650) trailheads and improved to Green Mt. (1750), Buck and Huckleberry trailheads. Moderate risk of future loss of vehicle access to all but Huckleberry.	5-same as Alt. B, but low risk of future washout at MP 14.4
c. Developed recreation sites (# and annual use days) accessed by vehicles	2-Buck Campground (1550) and Suiattle Guard Station (250), but high risk of future loss of access. No vehicle access to Sulphur Campground (1850).	3-Vehicle access restored to Sulphur Campground (1850) and improved to Buck Campground (4800) and Suiattle Guard Station (250). Moderate risk of future loss of vehicle access.	3-same as Alt. B, but low risk of future washout at MP 14.4.
d. Miles of Drivable Road for Dispersed Rec	16-No vehicle access last 2 miles, but high risk of loss of access on all 18 miles.	18-vehicle access restored last 2 miles and improved on 16. Moderate risk of future loss of vehicle access	18-same as Alt. B, but low risk of future washout at MP 14.4.
e. Miles of Vehicle Access for Emergency and Admin Use	16-No vehicle access last 2 miles, but high risk of loss of access on all 18 miles.	18-vehicle access restored last 2 miles and improved on 16. Moderate risk of future loss of vehicle access	Same as Alt. B, but llow risk of future washout at MP 14.4.
2) Repairs may be expensive			
a. Cost of Repairs	$0	$280,000	$245,000
b. Cost of Future Maintenance	$10,000 but high risk of road washout then $0	$11,250	$11,250
c. Risk of Future Washouts/Repairs	High risk of road washout at MP 14.4.	Moderate risk of road washout at MP 14.4.	Low risk of road washout at MP 14.4.

Issues (1)) and Measures (a.)	Alternative A No Action	Alternative B Repair in Place	Alternative C Move Back
3) Impact on Wild and Scenic River			
a. Effect on free flow and water quality (distance from river channel).	No repairs so no affect.	No effect on free flow. 5 feet from river bank as repair at MP 14.4 is adjacent to channel.	No effect on free flow. 60-125 feet away from channel for road relocation at MP14.4.
4) Impact on fish habitat and riparian reserve.			
a. Effect determination and sediment produced by repairs.	Not likely to adversely affect due to sediment from continued erosion from damaged road fills.	Adverse affect due to placing approach fills within Downey and Sulphur channels. Estimated 0.4 cubic yards of short term sediment.	Not likely to adversely affects since road fills outside bankfull channel. Esimated 0.2 cubic yards of short term sediment.
b. Distance (feet) of road from bankfull channel	5 feet from river at MP14.4. 17.5 feet of approach fill is in Downey Creek. 14 feet of approach fill is in Sulphur Creek.	5 feet from river channel at MP14.4. 17.5 feet of approach fill is in Downey Creek. 14 feet of approach fill is in Sulphur Creek.	60 to 125 feet away from river channel at MP 14.4. 0 feet from bankfull channel to retaining wall at Downey Creek. 1 foot from bankfull channel to retaining wall at Sulphur Creek.
c. Acres of riparian vegetation removed	0-no repairs	0-repairs are within existing road corridor.	1 acre removed for relocation of road at MP 14.4.
5) Impact to old growth and owl and murrelet habitat.			
a. Number & Size of Trees Removed	0	0	30-40 trees 24-75” diameter at MP 14.4
b. Spotted Owl & Murrelet Removed	0	0- No effect	1 acre of low quality nest and roost habitat removed, but not likely to jeopardize species or adversely modify critical habitat.

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.

Roads and Access Affected Environment

Prior to the flood, Suiattle Road 26 provided access for various recreation and administrative uses. Recreation uses include Buck Creek and Sulphur Creek Campgrounds, Suiattle Guard Station cabin rental, Green Mountain Horse Pasture, seven trailheads, two lookouts, a major portal to the Glacier Peak Wilderness and the Pacific Crest National Scenic Trail, and commercial and private river recreation on the Suiattle River. Dispersed recreation uses include scenic driving, gathering mushrooms, berries, and 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.

Roads Analysis

The Mt. Baker-Snoqualmie National Forest Roads Analysis (July 2003) identifies transportation management opportunities and priorities. It assesses 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 incorporates Forest transportation management objectives and priorities. Road analysis provides the responsible official 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. The Operational Maintenance Level (see definitions below) of this section of Road 26 is ML 4. The Suiattle Road 26, MP 9.8 to its end, has a designated current and future service level of B, which generally means congested during heavy traffic, has mixed vehicle types, high priority for safety, and the road surface is stable for predominant traffic (Forest Plan, p. 4-75, complete definitions, p. 4-71). The Suiattle Watershed Analysis states that Road 26 is a high need for recreation access (Suiattle WA p. 11 Chapter 3). The following table displays the road information and roads analysis results.

Table 6: Roads Analysis Results for Roads beyond Road 26 MP 14.4

MP-milepost, ML- Maintenance Level, Obj.-Objective, Op.-Operational

Road No.	Road Name	MP	End MP	Miles	ML Ob	ML Op.	Resource Concern	Access Need
26	Suiattle Road	14	23	9	4	4	Yes	Yes
2600014	West Buck Creek Campground	0	0.8	0.8	3	3	Yes	Yes
2600016	Suiattle Guard Station	0	0.8	0.8	2	2	Yes	Yes
2600017	Buck Camp Para	0	1	1	1	1	Yes	No-Closed
2600021	Downey Creek Trailhead	0	0.1	0.1	3	3	Yes-little	Yes
2600025	Sulphur Creek Campground	0	0.5	0.5	3	3	Yes	Yes
2600027	Suiattle Trailhead	0	0.2	0.2	3	3	Yes	Yes
2680	Green Mountain	0	5.7	5.7	3	3	Yes	Yes
	Total Miles Past MP14.4			18				

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.

Since the Preliminary EA was released for 30-day comment period:

Comments were received that discussed the repeated washouts of sites along the Suiattle Road and that this type of erosion would happen again. Of the three current damage sites, only Sulphur Creek Bridge approaches had previously been damaged. The proposed repair to pull back the approach fill would reduce the risk of future damage.

Flood Damage

In the past, the Suiattle River has damaged Road 26 repeatedly, and the risk of future damage remains high, as the road is located within the floodplain of the river. An earlier analysis (Suiattle Road 26 Repair EA 1992) for repair of Road 26 evaluated an alternative for closing the road, but the decision was made to maintain road access to the current Suiattle Trailhead, developed campgrounds, numerous trailheads and dispersed recreation along the road (Suiattle WA p. 21 Chapter 3).

Road 26 is the main Forest arterial road into the Suiattle River watershed. Over the documented 30-year flood history (1974-2004), seven road sites have had repeated failures. At Site #3, the Sulphur Creek Bridge western approach was damaged in the 2003 flood event (prior damage was to the eastern approach).

Past damage to Road 26:

1. MP 2.7-2.8, two floods (1979, 1996) plugged a series of culverts causing road fill failure. Repairs included replacing the smaller culverts with larger culverts and replacing the fill.
2. MP 3.0, two floods (1979, 1980) plugged a culvert causing road prism failure; the repair was replacement with a larger culvert and road prism.
3. MP 3.5-3.7, two floods (1989, 1990) again plugged two culverts causing road prism failure. Repairs included replacing the culverts with larger culverts and replace the road fill.
4. MP 10.2, three floods (1979, 1990, 1996) plugged a culvert causing road prism failure. Repair was to replace the culvert a larger culvert and replace the road fill.
5. MP 12.5-12.7, during three floods (1980, 1990, 1996) river channel and road encroachment occurred and at MP 12.6, a culvert also plugged causing road fill failure. The repair included reinforcing the road embankment wall and replacing the road fill. A larger culvert was installed at MP 12.6.
6. MP 13.0-13.1, during two floods (1980, 1990) river channel and road encroachment occurred. The repair entailed reinforcing the road embankment and replacing the road fill.
7. MP 22.9, two floods (1980, 2003) damaged the east approach of the Sulphur Creek Bridge. The repair in 1980 included replacing the approach.

Road 26 intersects 11 perennial channels (crossings of the river channel or Suiattle River tributary crossings) and six of the road channel crossings are bridges. Because of this history of flood damage, the Forest has spent considerable time and resources on road flood-proofing and upgrading. Small culverts have been replaced with larger culverts at 23 sites. At a couple of sites, the road prism has been realigned or re-routed. No previous flood damage has occurred at Site #1 or at Site #2. A listing of all past flood damage and repairs on the Suiattle Road 26 are in the Appendix.

Private Property Access

ANILCA (Alaska National Interest Lands Conservation Act described on page 11) 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. There is an 80-acre parcel of private land 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. Around the 1920s, allotments were made to members of the Sauk-Suiattle Tribe. This 80-acre parcel was given 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 mainly for administrative purposes as a helicopter landing for fires, search and rescues, and projects and as a group camp.

Roads and Access Environmental Consequences

Alternative A (No Action)

Under the no action alternative, no repairs to the three damage sites would be made.

Access

Site #1 MP 14.4: The temporary road at Site #1 would remain at current Level 2 standards (one lane, high clearance vehicles). This may restrict the type of vehicle and potential use of the road beyond the MP 14.4 to vehicles that can navigate the temporary road fix. The Suiattle Road at Site #1 would no longer meet its designated service and maintenance level (ML) 4 standard. Without any repairs at Site #1, there is a high risk that the Suiattle River would washout and close the road there (ML1 for the remaining nine miles plus an additional nine miles of other roads would be inaccessible) at some time in the near future (estimated within five years).

Site #2 MP 21.9: There would not be any repair of the road approach to the Downey Creek Bridge. This would leave two miles of road beyond there closed to vehicles (ML 1). The road would remain blocked with concrete barrier before Downey Creek where the current turn around is located (MP 22.6).

Site #3 MP 22.9: There would not be any repair of the road approach to the Sulphur Creek Bridge. The bridge would continue to be inaccessible to vehicles (ML 1).

Without vehicle access, 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. Forest Service staff would not be able to access the last two miles of Road 26 by vehicle. There is a high risk that the temporary road would washout at MP 14.4 and then there would be no vehicle access on 18 miles of road. Response to emergencies would take longer.

Risk of Future Washouts

Left unprotected there is an extremely high risk that future flood events would take another large segment of road at Site #1. 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 at Site #1. The river is eroding the toe slope with the potential to undermine this section of the road. Without repair, this section is likely to fail.

Cost of Repair and Future Maintenance and Repairs

There would be no repairs so there would be no cost of repairs. Current annual road maintenance is estimated at $625 per mile. Of the 18 miles of road past Site #1, only 16 miles are being maintained for an estimated annual cost of $10,000 (i.e. Road 26 is closed at Downey Creek at MP 21.9, so the last two miles of road received almost no maintenance). There is a high-risk that Road 26 will washout at Site #1 and once equipment access is lost, there would not be any maintenance on the 18 miles of road beyond there.

Alternative B

Access

If implemented, this Alternative would include repairing the damage sites and restoring vehicle access back to the end of the Suiattle Road.

Site #1 MP 14.4: The temporary road would be improved and reinforced to a standard that would provide for mixed vehicles. The 18 miles of road exist beyond Site #1 would be accessible by mixed vehicles.

Site #2 MP 21.9: The road approach to the Downey Creek Bridge would be repaired, and the road would be drivable to the end.

Site #3 MP 22.9: The approach fill to the Sulphur Creek Bridge would be repaired and the road would be drivable to the end.

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. Forest Service staff would be able to access the last two miles of Road 26 by vehicle.

Risk of Future Washouts

There would be a moderate risk of future road washout at Site #1 since the 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 with the potential to undermine this section of the road. This risk would be reduced with the reinforcement of buried riprap in the road prism. Sites #2 and #3 have the same risk of washout as their pre-flood condition as the approach fills are still located within the bankfull channels.

Cost of Repair and Future Maintenance and Repairs

Cost of repair associated with Alternative B would be approximately $280,000. The large amount of riprap needed at Site #1 creates a higher cost for this alternative. Future maintenance costs would remain the same as the pre-flood condition and are estimated at $625 per mile annually on the 18 miles of road beyond Site #1 for a total of $11,250. The cost of future repairs may be similar to the current cost plus inflation.

Alternative C

This alternative would be the same as Alternative B except for the following:

Risk of Future Washouts

The risk of future washouts would be low. This is because the relocation at Site #1 moves the road 60 to 125 feet further away from the river. The repairs at Site #2 and Site #3 bridges would have concrete retaining walls and riprap installation for improved slope protection and would be moved back and out of the bankfull channel. This added opening would help reduce water velocity and scour potential.

Cost of Repair and Future Maintenance and Repairs

Cost of repair would be about $245,000. This cost is lower than Alternative B, because this alternative requires much less riprap, and the existing on-site riprap is a sufficient quantity.

Road and Access Cumulative Effects

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 the management of the National Forest System roads, be consistent with the Forest Plan, the Forest Roads Analysis, and the Access and Travel Management Plan. The other project in the Suiattle Watershed affecting vehicle access is repair of the Boundary Bridge on Road 25. There would be no cumulative effects for repair or non-repair of the Boundary Bridge because it accesses the south side of the river and does not overlap with this portion of Road 26, which is on the north side. Road maintenance activities are planned on Road 26, but they do not affect vehicle access.

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.

Forest road 26 runs parallel to the Suiattle River for most of its length; the road pre-dates the river's wild and scenic designation (1978).

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 existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the National Wild and Scenic River system shall not automatically bar its consideration for such inclusion: provided that this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the National Wild and Scenic Rivers system.*

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 two federally-listed fish species in the Suiattle River basin: (Chinook salmon and native char—bull trout and Dolly Varden). Coho salmon, a Regional Sensitive Species and candidate for federal listing, is also found, along with: steelhead, sockeye, pink salmon, coastal cutthroat trout, and – from limited observations—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, bald eagle, and potentially gray wolf. Eagle use of this segment of the Suiattle River system is minimal due to a relative lack of food sources. See Wildlife discussion, below. Other species include Management Indicator species (deer, mountain goat, pine marten, and woodpeckers) and Regional Forester Sensitive Species (Townsend's big-eared bat and wolverine). Wolverine would not be expected to be found in the project area, due to 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 Bedal Creek where timber management has occurred since the 1940's.

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. Eight commercial outfitters are permitted and all eight may provide guided whitewater rafting on the lower Suiattle. The loss of access on the south end of Boundary Bridge, caused by the October 2003 flood, has forced outfitters to find alternative launch sites. The boat take out for Lower Suiattle excursions is located at the recently renovated Sauk Boat Launch adjacent to the Highway 530 Bridge on the Sauk River.

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

Table 7: 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	

Use numbers, based on outfitters' reports and register box counts, suggest that use on the Lower Suiattle is less than 1,000 boaters per year. Use reports for 2003 suggest far fewer trips than recent averages due primarily from the loss of access at the south end of the Boundary Bridge.

Since 2000, use of the Upper Suiattle by rafters and kayakers increased from previous years because fewer logjams, strainers, and sweepers existed, and the news spread in the boating community (North, Douglas 1999). Typically, access to the Upper Suiattle is cyclical. Following large storm events such as those in 1980 and 1990, the Upper Suiattle was less likely to be used due to large amounts of wood debris, logjams, sweepers and strainers (Bennett, Jeff and Tonya 1997). Current reports indicate that October 2003 storm has again rendered the upper reach hazardous to boaters. The upriver limit of safe navigation is downstream of the proposed road repair sites, near milepost 13.0.

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 Alternatives would adversely affect the free-flow of the Wild and Scenic River as none of the proposed repairs meet the definition of a water resources project.

Alternative A (No Action)

If Alternative A were implemented, the bank at Site #1 would likely to continue to erode. The temporary would eventually destabilize and erode away as the river undercuts the toe of the slope below the road.

The bridge crossings at Downey and Sulphur Creeks (Sites #2 and #3) would be abandoned. 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 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 slide and raw slope at Site #1 is similar to several other known sites along the Suiattle River.

Once the slope and road erode at Site #1, vehicle and boat access would no longer be available past that point, making launch sites beyond that site unavailable to commercial and private boaters.

Alternative B and C

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. This direction is also incorporated into standards and guidelines from the River Management Plan, Final: Skagit River (USDA Forest Service 1983). Project effects on free-flow, water quality and outstandingly remarkable values are summarized in this section.

Maintain and Enhance Free-Flowing Characteristics of the Rivers: 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 merits through the Environmental Assessment process.

None of the proposed repairs would threaten the free flowing characteristics of the Suiattle River because they are all would be outside the bed and bank of the Suiattle River. The visual characteristics of the Suiattle River would be retained.

Riprapping 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, and all riprap projects should be promptly revegetated with native or naturalized plant material.

No riprapping would occur within the bed and bank of the Suiattle River. If implemented, Alternative B would include burying riprap outside of the shoreline and Alternative C would include relocating the road away from the Suiattle River at Site #1 to reduce the risk of a repeat washouts. Site #2 and #3 are not on the Suiattle River.

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.

The proposed repairs under Alternative B would restore the road to its pre-flood condition. Alternative C would improve aquatic conditions by relocating the road at Site #1 further away from the Suiattle River and repairs at Downey and Sulphur Bridge approaches would increase the width under the bridge to more than bank full channel width.

Protect and enhance the various landscapes visible from the river as well as from its banks.

Scenic quality would be unimpaired at Site #1 as the site is similar to natural occurring slides frequently encountered along the river. Alternative C would relocate the road further from the river at Site #1.

Protect and Maintain Wildlife Habitat: The primary objective is to maintain the integrity and diversity of the wildlife species, populations, and habitats that existed in the Skagit WSR when it was established.

If implemented, Alternative B would not remove habitat and noise disturbance would not be expected due to the ambient noise level. With Alternative C, the Site #1 relocation would convert about one acre of low quality spotted owl nesting and roosting habitat and murrelet nesting habitat to road. 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. Refer to the Wildlife section for more information.

Protect and Enhance Fish Habitat:

If implemented, Alternative B would include replacing roadfill and riprap within the bankfull channels in Downey (Site #2) and Sulphur (Site #3) Creeks. Alternative C would include increasing the width under these bridges to more than bankfull channel widths and the installation of larger culverts at Site #1 relocation and at the overflow channel at Site #2. The effects on fish would be short-term with minimal sedimentation during construction. Refer to the Fisheries section for more information.

Protect or improve present water quality.

- Place special emphasis on protecting streamside vegetation.
- Give priority to protection of water quality in cases of conflict between water quality and other resource uses. Prevent alteration of natural channels or streambanks that would significantly affect the free-flow of water, the appearance of the stream, fish habitat or water quality.

Water quality of the three sites is within acceptable limits and in the long term would be unaffected be the project implementation. No Action would increase sedimentation along the inaccessible road. Alternative B would include the reinforcement of the road next to river (Site #1) and replacement of roadfill and riprap within the bankfull channel widths at Downey (Site #2) and Sulphur (Site #3) Creeks. Alternative C, if implemented, would include moving the road further away from river at Site #1 and increasing widths under the bridges at Site #2 and #3.The expected effects on water quality would be of short duration and minimal. Refer to Water Quality section for more information.

Both Alternatives B and C would meet the guidelines for the Wild and Scenic River. If implemented, neither Alternatives B nor C would have an affect on the free-flowing characteristics of the river. The bridge repair Sites #2 and #3 are on tributary streams, Downey and Sulphur Creeks. Site #1 is away from the bed and bank of the Suiattle River. Scenic quality would be unimpaired at Site #1. Currently, Site #1 is similar in appearance to other slide areas along the river. Following repair of the road, Site #1 would look similar to natural occurring slides frequently encountered along the river. The other 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.

Skagit W&SR Cumulative Effects

As has been discussed, there would be no direct or indirect effects from activities in either Alternative B or C to the free flow of the Suiattle River, thus there would be no effects from this projects that could be added cumulatively to effects from other projects.

Recreation Affected Environment

Recreation on or accessed by this portion of Suiattle Road 26 includes developed camping, dispersed camping, hiking, 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 where

recreation activities include hiking, horseback riding, fishing, hunting, and camping. Recreation on the river is covered under the Wild and Scenic River section.

Developed Recreation

Buck Creek (about MP 15, just beyond Site #1) and Sulphur Creek (adjacent to Site #3) Campgrounds are under a concessionaire agreement with Recreation Resource Management for operation and maintenance. The campgrounds are 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, one of which was damaged in the October 2003 floods. Sulphur Creek Campground has not been accessible by vehicle since October 2003 due to the Road 26 flood damage. The following table displays campground use figures that were collected by employees of Recreation Resource Management during the operating periods. The campground use figures show a drastic reduction (60%) after the flood and reports of the Suiattle Road being washed out.

Table 8: Campground Annual User Days

User Days by Year	Buck Creek Campground	Sulphur Creek Campground
2005 User Days	1,929	0 known
2004 User Days	1,200	0 known
2003 User Days	2,574	1,043
2002 User Days	6,502	2,530
2001 User Days	5,271	1,987
Annual Average 2001-2003	4,800	1,850

The Suiattle Guard Station (about MP 16) was constructed in 1913 and listed on the National Register of Historic Places. It is located on a spur road off the 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 is then available for maintenance and operation of the Guard Station.

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 are no longer maintained, are also used for dispersed camping.

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.

Since the 2003 flood there has been little dispersed use on the two miles of Road 26 past Downey Site #2 since it is closed to vehicles. Some hiking and biking has occurred since the 2003 flood on these two miles as evidenced by a few vehicles parked at the closure and hiking reports on the web. It was reported that a few stock users have been on the road past Site #2, but crossing Downey Creek could be difficult and hazardous.

Trails

Five trailheads affected by this road project are Huckleberry Mountain, Green Mountain, Buck Creek, Sulphur Creek, and the Suiattle Trailhead. Except for Buck Creek, these trailheads provide hiker and stock access to the Glacier Peak Wilderness. The Congressionally designated Glacier Peak Wilderness makes up 70 percent of the entire Suiattle Watershed. Primary wilderness use is on trails including the Pacific Crest Trail. 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 9: 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	.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	.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	.6
785.2	Backpacker Camp	Hiker	Easiest	Heavy	Glacier Peak Wilderness	.1
985.3	Miner's Ridge Lookout	Stock	Easiest	Medium	Glacier Peak Wilderness	.1
986	Dusty Ridge	Hiker	More Difficult	Low	Glacier Peak Wilderness	3.5
987	Sheep Camp	Stock	More Difficult	Low	Glacier Peak Wilderness	1.0
788	Grassy Point	Stock	More Difficult	Medium	Glacier Peak Wilderness	3.5
789	Buck Creek Pass	Stock	More Difficult	Medium	Glacier Peak Wilderness	5.0
790	Milk Creek Trail	Stock	More Difficult	Heavy	Glacier Peak Wilderness	6.5
791	Gamma Way	Stock	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	Stock	More Difficult	Low	Glacier Peak Wilderness	4.0
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 also washed away portions of the Suiattle River Trail and numerous trail bridges on the Pacific Crest Trail and Milk Creek Trail. Contracts for repair of the Suiattle Trail, the Milk Creek Trail, Suiattle Bridge, and the Downey Creek Trail have been awarded and are scheduled for completion by the end of 2006. Due to extensive flood damage to the trails and roads in the Suiattle and White Chuck drainages, much of the Pacific Crest Trail and Glacier Peak climbing route are currently inaccessible or have much longer approach routes.

The following table shows trail use before the flood, for the three trailheads where registration boxes are maintained. The use is averaged, using data from 1998 through 2003, and adjusted for an estimated compliance rate of actual users that signed the registration. No trail use data are available for Buck Creek or Huckleberry Trailheads. There are also no estimates of trail use since the flood event.

The public was notified of the flood damage and inaccessibility to the many road, trails, and recreation sites, and use has drastically reduced as observed by Forest Service staff (few cars at the road closure and few hikers seen by the Miners Ridge lookouts). Some hikers have ventured across Downey Creek, as evidenced by a few vehicles at the road closure barrier.

Table 10: Trailhead Use Estimates

Trailhead	Use at 83% Compliance
Suiattle	1,650
Green Mountain	1,750
Downey	350

The many damaged roads and trails on the north side of the Darrington Ranger District have reduced recreation opportunities and use in the Sauk, Suiattle, and White Chuck areas of the District. Currently there is a reduction in the amount of day hikes as well as longer and more difficult hikes to the Glacier Peak Wilderness area. Many main roads are inaccessible for road dispersed recreation and vehicle access to trailheads. The Darrington District Trail Inventory shows 367 miles of existing trail and about 50 percent (188 miles) of those trail miles were affected due to damage to roads or trails.

Recreation Environmental Consequences

Developed Recreation

Alternative A (No Action)

Alternative A, if implemented, would mean no repairs would be made to the damage sites. There would continue to be some vehicle access past Site #1, but there would not be any vehicle traffic past Site #2. There would not be any vehicle access to Sulphur Creek Campground so there would be little or no use there. There is an estimated annual loss of 1,850 user days (average use prior to 2003 flood) at Sulphur Creek Campground since the flood, and that would likely continue. Some users may divert to the Buck Creek Campground, or they may choose not to camp in this area at all.

Currently, fewer campers have been using Buck Creek Campground since the flood event, and it is estimated that use would continue to be low for the next several years if the road is not fixed. The reduction in use is thought to be due to the media information that the Suiattle Road 26 was damaged before the campground (Site #1 MP 14.4 is about 0.6 miles before the Buck Creek Campground) and it was not clear whether the road was passable. The average annual use at Buck Creek Campground was 1,550 for the years 2004 and 2005, while the pre-flood use was 4,800 user-days annually.

There is a high risk of future washout of the road at Site #1, which would eliminate vehicle access to the Buck Creek Campground and Suiattle Guard Station. These recreation facilities would be closed, for reasons including higher operation costs from lack of vehicle access (i.e. repairs and maintenance access by foot).

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:

- Sulphur Creek Campground-1,850 user days per year (based on 2001 to 2003 annual average)
- Buck Creek Campground-4,800 user days annually.
- Suiattle Guard Station-250 user days annually.

As in the past, Recreation Resource Management would operate and maintain the Sulphur Creek Campground.

There would be a moderate risk of future road washout and loss of vehicles access at Site #1 since the road is in a high-risk location as it is adjacent to the Suiattle River where current river flows are directed at it.

Alternative C

This alternative would have the same effects as Alternative B except there would be a low-risk of future road washout and loss of vehicle access at Site #1 since the road would be relocated further away from the river.

Dispersed Recreation

Alternative A (No Action)

With No Action, vehicles would continue to be able to drive the 16 miles of road past Site #1. The last two miles would remain be closed.

Scenic driving, snowmobiling and dispersed car camping would remain unavailable on the last two miles. Other dispersed recreation activities such as fishing, hunting, berry picking, mushrooming, and back-country skiing would continue to be reduced as well, because of the difficult crossing at Downey Creek and extra distance to walk. Some would hike and bike the two miles to reach trails. There are reports of stock use on this segment of road; however, crossing Downey Creek could be difficult and hazardous.

Should the temporary road at Site #1 washout, the remaining nine miles of Road 26 plus an additional nine miles of other roads would be inaccessible by vehicles in the future (estimated within five years). Eighteen miles of road would be inaccessible to vehicles for access to fishing, hunting, berry picking, mushrooming, snow play, scenic driving, and dispersed camping. Some hiking and other dispersed recreation would occur on these eighteen miles of closed road, but it would probably be at reduced levels. Hikers, bikers, stock, and ATVs (All Terrain Vehicles) would probably use the road to access other roads and trails until the roads become overgrown with vegetation.

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 to driving for pleasure, access for passenger cars, and other dispersed recreation activities such as fishing, hunting, berry picking, mushrooming, snowmobiling, back-country skiing, scenic driving, and dispersed camping (Downey Creek site) on the entire length of Road 26.

There would be a moderate-risk of future road washout and loss of vehicle access at Site #1, because of its location adjacent to the Suiattle River.

Alternative C

This alternative would have the same effects as Alternative B except there would be a low-risk of future road washout and loss of vehicle access at Site #1 since the road would be relocated further away from the river.

Trails

Alternative A (No Action)

With no action, the road would remain closed at Site #2, and decreased use of the Suiattle and Downey Creek Trails would continue due to the difficult to the trailheads. This road closure at Site #2 adds a more difficult crossing at Downey Creek and two more miles for hikers accessing the trails at the Suiattle Trailhead.

There would be a difficult crossing at Downey Creek, and a short walk to reach the Downey Trailhead. It is unknown how many would walk the road for access. Trail repairs are under contract and would be completed by the end of 2006 on the Suiattle Trail, Milk Creek Trail Suiattle Bridge, and the Downey Creek Trail. After the trail repairs are completed there would probably be an increase in the number of hikers and stock using them, but it would continue to be much less than there were before the flood event, especially for stock users due to the difficult crossing at Downey Creek.

Five land-based guides operate in the Suiattle drainage, providing backpacking trips. These outfitters would need to adapt to longer access distances or would likely be displaced to other districts and forests.

Use of the Green Mountain, Buck Creek, and Huckleberry Trailheads would continue for a short time. Without any repairs at Site #1, there is a high risk that the Suiattle River would washout and the road would be closed there (estimated within five years). This would mean that the Green Mountain and Buck Creek Trailheads would no longer be accessible by vehicles and use would greatly decrease. A few people would hike, bike, or ride stock or ATVs the extra eleven miles to reach the Green Mountain Trailhead, but use would be greatly reduced. Buck Creek Trail would require an extra 0.6 mile walk one way to reach it so a few may continue to go there. Huckleberry Trailhead would be at the road washout at Site #1 so it may even receive more use than currently since the other trails would be more difficult to access.

Alternative B

This alternative would restore vehicle access to the end of Road 26 and use at the Suiattle Trailhead is expected to return to pre-October 2003 flood levels, estimated at 1,650 use days annually. Use at Downey Trailhead is also expected to return to an estimated pre-flood level of 350 use days annually. The trail repairs are under contract and would be completed by the end of 2006 on the Suiattle Trail, Milk Creek Trail Suiattle Bridge, and the Downey Creek Trail.

There would no change in the estimated 1,750 users that would continue to be able to drive to the Green Mountain Trailhead, as they currently are able to. Use at Buck Creek and Huckleberry Trailheads are expected to continue.

There would be a moderate-risk of future road washout and loss of vehicles access at Site #1 because of its location adjacent to the Suiattle River.

Alternative C

The recreational consequences of this alternative would be the same as Alternative B with the exceptions of reconfiguring the Huckleberry Trailhead and relocating the beginning of the trail for about 1,400 feet. This is not expected to change the use of the trail or trailhead from pre-flood levels.

This alternative would have a low-risk of future road washout and loss of vehicle access at Site #1 since the road would be relocated further away from the river.

One comment received during the 30-day comment period stated, "Recreation effects must consider the needs for low-elevation, disabled user-accessible, and non-strenuous non-motorized trails".

Response: While construction of accessible low elevation trails is outside the scope of this project, additional information has been added for effects on disabled users.

Disabled User Access Environmental Consequences

Alternative A (No Action)

With no action, no repairs would be made. Disabled users could continue to drive past Site #1, but would not be able to drive past Site #2. The large gap at Downey Creek Bridge, would preclude wheelchair accessibility, and would be extremely difficult to cross.

Buck Creek Trail is an easy low elevation trail, but it is not wheelchair accessible. There are campsites and restrooms in both Buck Creek and Sulphur Creek Campgrounds that are accessible, but only Buck Creek Campground could be accessed by disabled users.

Without no repairs at Site #1, there is a high-risk that the Suiattle River would washout and the road would be closed there. The remaining nine miles of Road 26 plus an additional nine miles of other roads would be inaccessible by vehicle in the future (estimated within five years) and the washout would likely not be navigable by wheelchair or by disabled persons.

Alternatives B

This alternative would restore vehicle access on the last two miles of Road 26 past Site #2. The repair of the road would reestablish driving access for disabled users and allow use at Sulphur Creek Campground.

There would be a moderate risk of future road washout and loss of vehicles access at Site #1 since the road is in a high-risk location adjacent to the Suiattle River.

Alternative C

This alternative would have a low-risk of future road washout and loss of vehicle access at Site #1, since the road would be relocated further away from the river.

Recreation Cumulative Effects

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, consistent with the Forest Plan, Forest Roads Analysis, and Access and Travel Management Plan. The Suiattle Road 26 repair would be scheduled for implementation in the summer and fall of 2006.

The other project in the Suiattle watershed affecting vehicle access is repair of the Boundary Bridge on Road 25. There would be no cumulative effects for repair or non-repair of the Boundary Bridge because it accesses the south side of the river and does not overlap with this portion of Road 26, which is on the north side. Road maintenance activities are planned on Road 26, but they do not affect vehicle access.

Contracts for trail repairs on the Downey Creek Trail, the Suiattle Trail, and the Milk Creek Trail that would be directly affected by the Road 26 repair, as crews would need to pass through the repair sites on Road 26. The repair projects overlap in time, all are scheduled to be completed by the end of 2006. Restoring vehicle access to trailheads and repairing the trails would likely restore recreational use to levels similar to those prior to the flood.

The floods of 2003 damaged a great number of roads and trails in the Sauk, Suiattle, and White Chuck River drainages. The 2003 flooding greatly reduced recreational opportunities on the Darrington District. Roughly, half of the 367 miles of trails on the District are 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.

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 was designated as Scenic.

The access road and the sites for the road repairs drain to the Suiattle River from several named and small, unnamed streams. Active 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. The public currently uses this road.

Section 7(a)(2) of the Endangered Species Act of 1973, 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 Forest Service consults with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) if projects potentially could affect listed species or special habitats.

Fish Species of Interest

Table 11: Fish Species of Interest for the Suiattle Road Repair Project[8]

Species (Stock)	Status	Primary Utilization	Habitat Limitations and Concerns
Chinook (Suiattle Spring)	NMFS–Listed threatened (3/99) [9] SaSI–Healthy (2003)	Suiattle mainstem to approximately RM 28.6; spawn in lower reaches of Big, Tenas, All, Straight, Buck, Circle, Lime, Downey, Sulphur, Milk	Floodplain modifications, mobile channel sediments, and natural and road-related sedimentation resulting in general lack of spawning habitat (less than 5 mi); poaching.
Coho (Skagit)	NMFS–Candidate (7/95) USFS–Sensitive[10] 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 (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, Milk.	Though escapement is increasing, sedimentation (natural and management-influenced) limits spawning habitat.
Chum (Sauk Fall)	NMFS–Not Warranted (3/98) SASSI–Healthy	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–Not Warranted (8/96) 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.	Limiting factors not well-known, likely include lack of off-channel habitats and sedimentation
Sockeye (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.	Riverine sockeye are not a distinct stock and are not routinely inventoried; limitations have not been determined.
Coastal sea-run cutthroat	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.
Bull trout	USFWS–Listed threatened (11/99) 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.
Salish sucker	USFS–Sensitive	Suiattle Slough, Marsh Pond	Limited data on known distribution

Chinook (Oncorhynchus tshawytscha), coho (O. kisutch), native char (bull trout [Salvelinus confluentus] and Dolly Varden [S. malma]), coastal cutthroat (Oncorhynchus clarki clarki), Salish sucker (Catostomus catostomus), chum (Oncorhynchus keta), pink (O. gorbuscha), a small population of riverine sockeye (O. nerka), and steelhead and rainbow (O. gairdneri).

8 Table is 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.

9 Source is USDA Forest Service 2004a.

10 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 (WDFW 1998, WDFW 2000, WDFW and WWTT 2003 draft).

Federally-Listed Species

Chinook

Though Puget Sound Chinook are federally listed as Threatened, the Suiattle spring Chinook stock is classified as healthy (WDFW and WWTT 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 11). 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.

Hayman (2004) notes in a draft of the Skagit Chinook Restoration Plan (Suiattle Spring Chinook Constraints section), that glacial melt is the primary factor depressing fry-to-smolt survival for Suiattle Chinook.

Bull Trout

The 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). 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 increase with human access, altering hydrodynamics at crossings, and effects to wood routing. See also the sections called Influence by National Forest Users.

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 Salish sucker, Puget Sound/Strait of Georgia coho salmon, Baker River (Skagit) sockeye salmon, and Puget Sound coastal cutthroat trout (see Table 11).

Salish sucker: Salish suckers are not expected to occur within the project area due to lack of their habitats.

Coho: Coho spawn in the Suiattle mainstem and in several named and unnamed tributaries of the Suiattle, including Downey and Sulphur Creeks. Juveniles rear all year in available off-channel habitats. Seepage beneath the overflow culvert just prior to the Downey Creek Bridge emerges and flows to the old Suiattle mainstem. Separated from the new outflow of Downey Creek when it hits the floodplain, this seepage contained juvenile coho in September 2005.

Sockeye: 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

Steelhead: Steelhead in the Suiattle is part of the Sauk stock of winter steelhead. In the project area, they are suspected or known to spawn in Sulphur and Downey Creeks. This stock is considered to be depressed (WDFW and WWTT 2003). The Washington Fish and Wildlife Commission enacted a moratorium on the retention of wild steelhead from May 1, 2004, through March 31, 2006; all wild steelhead in the state must be released.

Pink: 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, and numbers of returning spawners in 2005 are expected to be noticeably fewer.

Chum: Very limited observations by WDFW biologists document chum spawning in the lower Suiattle to about RM 1.6. 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 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 #3 in Upper);

Middle Suiattle: mainstem Suiattle and tributaries including Buck Creek upstream to, but not including, Sulphur Creek (Site #2 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 in 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 acres 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, that significant sediment-related impacts have occurred, presumably leading to reduced spawning and rearing. Roads can also act as fish passage barriers to spawning or rearing habitats upstream, and several roads within the watershed prevent upstream passage, including along Roads 25, 26, and 2540.

Floodplain habitat is moderately abundant along the lower Suiattle River up to RM 4.7 and from RM 9.6 (Tenas Creek) to RM 22.3, just upstream of Captain Creek (Smith and Waldo 2003, in Smith 2003). The extent of hydro-modification ranges from 0.2 to 0.6 percent, and the Suiattle has 0.21mi of modified streambank (Smith and Waldo 2003, in Smith 2003).

Project Level Fish Habitat Conditions

The road repair associated with this project would occur in the lower, middle, and upper Suiattle watersheds. When the Suiattle was assessed in 1999, wilderness conditions and non-federal management influenced much of the assessment. 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 is perceived 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 project includes Road 26, MP 0-29.1; Road 2680 MP 0.0-3.2 (pit); Green Mountain Horse Pasture (log deck storage); Suiattle River RM 24-26.3; Tributary (RM 0-0.02); Downey Creek (RM 0-0.02); and Sulphur Creek (0-0.02). Roads 26 and 2680 cross other named and unnamed streams. The three

main damaged sites were the primary focus of the assessment for the action area: Road 26 MP 14.4 (Site #1), Downey Creek (Site #2), and Sulphur Creek (Site #3).

The original construction of Road 26 in the valley bottom of the Suiattle River disturbed streambanks at all stream crossings and through riparian areas, disrupting hydrology of the area. The bridges at Downey and Sulphur Creeks were located across their alluvial fans and within their bankfull channels, leading to constriction of flows, particularly during large hydrologic events. Culverts were not necessarily sufficient to handle flood flows at all crossings. Road densities are 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 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. While flooding events may have flushed wood out of tributaries, observations post-flood indicate wood is accumulating in the mainstem.

Flood Effects

The October 2003 flooding events affected fish that had already spawned or had started spawning. Chinook and pink salmon were particularly affected. Chinook had already spawned, and while they lay their eggs deeper in the gravels than pink, the channel scouring and bedload movement likely destroyed most of these redds. Numbers of returning spawners would likely be noticeably reduced for Chinook in 2007-2009, and in 2005 (and possibly succeeding odd brood years) for pink.

The flooding events affected fish habitat at the project-level scale by eroding banks under Road 26 at Site #1, and by eroding fill and riprap at Sites #2 and #3. At Downey Creek the stream widened and recruited wood. Sulphur Creek also recruited many large trees to the stream. Downstream from Road 26, habitat in Downey Creek also changed when the mainstem shifted away from the mouth of Downey. During late summer, due to build-up of a gravel bar, flow from Downey Creek continues for an additional several hundred feet before the confluence with the Suiattle. Chinook spawners used this new habitat in 2004. The stability of this additional habitat remains to be determined, however, as the Suiattle may shift again during succeeding winters.

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 highly vulnerable to illegal harvest (USDA Forest Service 2004). Signs of poaching for Chinook 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. This 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 is allowed on bull trout, with both geographic and catch-size restrictions, though they were not spawning at this time. It is likely 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.

Through direct observations by a fishery biologist in 2004 of Chinook constructing redds in Buck Creek, such damage was suspected to have occurred from recreationists staying at Buck Creek Campground.

Critical Habitat

Critical habitat is a term used within the Endangered Species Act (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 26, 2005, designating critical habitat for Coastal-Puget Sound bull trout (70 FR 56212). While stream segments in the Suiattle River, Downey Creek, and Sulphur Creek were initially proposed for listing, National Forest System lands covered under the Forest Plan (including all lands within the Mt. Baker-Snoqualmie National Forest) were excluded from final listing designation. The nearest designated critical habitat is off-Forest, approximately five miles downstream from the proposed repairs at Site #1.

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, in Downey and Sulphur Creeks, and in the seepage beneath Road 26 under the overflow culvert near Downey as it flows through the former Suiattle mainstem floodplain.

Watershed and Fish Habitat Restoration

Formal watershed restoration on the Mt. Baker-Snoqualmie National Forest began in fiscal year 1995 as part of an Aquatic Conservation Strategy described in USDA Forest Service 1994. 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 12 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 12: 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	Inchannel 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

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. Several priority road-crossing fish-passage barriers in the Suiattle River system on the National Forest remain. Opportunities may also exist to selectively-thin some riparian stands along the Suiattle River mainstem or other fish-bearing streams to accelerate the growth of conifer species, as these are particularly important for their roles in creating fish habitat and improving the quality of those habitats.

Fisheries Environmental Consequences

Alternative A (No Action)

With this alternative, the project would not be implemented; no culverts would be upgraded, and no trees would be cut. There would be no ground disturbance or construction traffic and no further repairs to the damaged sites would be made. The temporary road at Site #1 would be left open until the Suiattle River undercuts the toe of the bank and this site would become the new end of the road. The end of Road 26 would otherwise be where the existing barriers were placed at about MP 21.6. The bridges over Downey and Sulphur Creeks would not be repaired, and the existing structures would not be removed.

Federally Listed Fish

With Alternative A, there would be no direct effects to federally listed fish and existing population trends of Chinook and bull trout would not change (Suiattle populations are stable or increasing). The section on Environmental Consequences to Geology, Soils, Hydrology, and Water Quality notes that it would take large floods to reach the damaged road fills at Downey and Sulphur Creeks and at the temporary road at Site #1. In this situation, some redds adjacent to the bridges that were not scoured and washed away by the high flows could be smothered or partially buried by the road fills (an estimated 50 cubic yards), with additional material entering the Suiattle should the road be overtopped. Linking these effects to selecting the No Action

alternative would be difficult to discern from damage due to the high flows and bedload transport from upstream of the Road 26 crossings at these sites and from upstream in the Suiattle.

The effect of sediments specifically from the three 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 from Site #1 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 inaccessible roads (up to 18 miles if Road 26 washes out at Site #1). 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, if not consumed on-site. At Downey Creek, particularly with the additional habitat created downstream from the bridge, poaching would continue, and enforcement would be more difficult.

Existing trends in Chinook 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*. The impact determination for Salish sucker is *No Impact* due to lack of habitat and species presence. Indirect effects of sedimentation would not reach chum (habitat used is beyond 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 road fill and fine sediments to areas occupied by coho, sockeye, coastal cutthroat, steelhead, and pink for spawning or rearing, potentially smothering or partially burying redds and filling rearing pools. Linking these effects to selecting the No Action alternative would be difficult to discern from effects due to the high flows and bedload transport from upstream of the Road 26 crossings at these sites and from upstream in the Suiattle. The effect of sediments specifically from the three 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. Illegal harvest of steelhead is suspected but not documented; any retention of wild steelhead is illegal (Suiattle fish are wild). A change in poaching of steelhead due to access would not be noticeable, as steelhead spawn upstream of Rd. 26. Because steelhead are returning to the

Suiattle at lower-than-expected numbers, any reduction in illegal harvest would help to increase the steelhead population.

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 direct sedimentation or potential inputs of oil and other chemicals from vehicles to contaminate water quality because there would be no use of equipment in water or along the banks.

Sedimentation during large floods from erosion of damaged fills and from fill-failures at the undersized culverts at Sites #1 and #2 would cause sediment deposition in the mouths of Downey and Sulphur Creeks, and degrade adjacent spawning and rearing habitats. With normal flows, gradual inputs of fine sediments from surface erosion would occur when flows can transport the sediments downstream into the Suiattle River where the effect would be diluted by the high levels of background sediments. Woody debris loading and routing in lower Downey and Sulphur Creeks would continue to be interrupted. There would be no measurable change in the quantity or quality of fish habitats.

Critical Habitat: Sedimentation from continued erosion of damaged road fills and unmaintained roads associated with taking no action *May Affect*, but would be *Not Likely to Adversely Affect* designated critical habitats for Chinook or bull trout.

While large floods would add road fill and fine sediments to designated critical habitats used for spawning, rearing and migration, linking these effects to selecting the No Action alternative would be difficult to discern from effects due to the high flows and bedload transport from upstream of the Rd. 26 crossings at these sites and from upstream in the Suiattle. The effect of sediments specifically from the three flood-damaged sites, to designated critical 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 primary constituent elements of designated critical habitats.

Essential Fish Habitat: Sedimentation from continued erosion of damaged road fills and unmaintained roads associated with taking no action *May Affect*, but would be *Not Likely to Adversely Affect* essential fish habitats for Chinook, coho, or pink salmon.

While large floods would add road fill and fine sediments to designated critical habitats used for spawning, rearing and migration, linking these effects to selecting the No Action alternative would be difficult to discern from effects due to the high flows and bedload transport from upstream of the Rd. 26 crossings at these sites and from upstream in the Suiattle. The effect of sediments specifically from the three 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.

Alternative B

Alternative B would repair the damaged sites to restore access. Site #1 would remain in its current location, but a trench filled with riprap would be constructed to protect the site from future failures. The bridges at Site #2 and Site #3 would have fill and riprap replaced, which

would include materials in the bankfull channel. Refer to Chapter 2, Alternatives, for a complete description.

Federally Listed Fish

Implementation of Alternative B would maintain the stable-to-increasing trends for federally listed fish at the scale of the Sauk sub-basin and Suiattle River watershed; project activities would not measurably influence fish populations at this broad scale due to the somewhat limited extent of effects.

At the project scale, there would be no direct effects from activities at Site #1 because activities would be on a terrace of the Suiattle up out of the floodplain, and the tributary stream crossed at that site is not fish bearing. Direct effects to federally listed fish in Downey and Sulphur Creek at the Road 26 bridges would be avoided by not working when fish are present.

Fill and riprap placed within the bankfull channels (up to 50 feet of length) at Downey and Sulphur Creeks would replace currently available fish habitat. The channel restriction at the bridges, not replacing the undersized 48" relief culvert at Site #2, and the potential for wood debris to jam against the piers and further impound flows, makes the site more susceptible to wash out during future large floods. The coarse sands and gravels composing this road material would wash downstream into spawning and rearing areas up to 1.2 miles downstream, and fine sediments could settle up to 12.4 miles downstream (see Water Quality Alternatives B and C on page 77 and Cumulative Effects discussion under Geology/Soils/Hydrology/Water Quality on page 79). The large boulders composing the riprap protection would dislodge during a large flood and displace nearby fish habitats. Bull trout spawn upstream of these lower road crossings, but Chinook redds 200 to 300 feet downstream of the bridges would be wholly or partially buried, and rearing habitats (pools and channel substrates) would fill, displacing fish and degrading the quantity and quality of habitats.

Indirect effects to fish in the form of additional sedimentation in the Suiattle River from Site #1 would be insignificant due to the high background load in the Suiattle River.

The effect determination is May Affect, Likely to Adversely Affect for Chinook and bull trout, and consultation with NMFS and USFWS would need to be reinitiated if this alternative is selected.

An indirect effect from restoring vehicular access would be to make poaching easier at Downey and Sulphur Creeks than with current access. Enforcement would also be easier. Illegal harvest reduces the size of the (Downey Creek, Sulphur Creek) subpopulations, though effects to the total Suiattle population as a result in selecting this alternative would be difficult to determine.

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*. The impact determination for Salish sucker is *No Impact* due to lack of habitat and species presence. Indirect effects of sedimentation would not reach chum (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 level, there would be no direct effects from activities at Site #1 because activities would be beyond the channel banks of the Suiattle, and the tributary is not fish bearing. Direct effects to sensitive fish (coho, sockeye, coastal cutthroat) and to steelhead and pink salmon in Downey and Sulphur Creek at the Rd. 26 bridges would be avoided by not working with fish present. Indirect effects from Site #1 in the form of additional sedimentation to rearing or migration habitats in the Suiattle River would be insignificant due to the high background load in the Suiattle River.

Fill and riprap placed within the bankfull channels (up to 50 feet of length) at Downey and Sulphur Creeks would replace currently available fish habitat. The channel restriction at the bridges, not replacing the undersized 48-inch relief culvert at Site #2, and the potential for wood debris to jam against the piers and further impound flows, makes these sites more susceptible to wash out during future large floods. The coarse sands and gravels composing this road material would wash downstream into spawning and rearing areas up to 1.2 miles downstream, and fine sediments could settle up to 12.4 miles downstream (see Cumulative Effects discussion under Geology/Soils/Hydrology/Water Quality). The large boulders composing the riprap protection would dislodge during a large flood and displace nearby fish habitats.

Depending on the timing, failure of this magnitude would affect multiple life stages (eggs, pre-emergent fry, juveniles, adults) of coho, sockeye, cutthroat, steelhead and pink in the lower 200-300 feet of Downey and Sulphur Creeks by washing out or burying redds, abrading gills, and causing displacement due to effects to habitat features (such as to the quality and quantity of spawning gravels and pools). Salish suckers and chum are not expected to be in the area and would not be influenced.

An indirect effect from restoring vehicular access would be to make poaching easier at Downey and Sulphur Creeks than with current access. Enforcement would also be easier. Illegal harvest reduces the size of fish populations, though effects to the Skagit stocks (coho, pink), Sauk winter steelhead, Suiattle riverine sockeye, and Suiattle coastal cutthroat populations as a result of selecting this alternative would be difficult to determine.

Fish Habitat

At the scale of the Suiattle River watershed, activities associated with Alternative B would not measurably influence habitat indicators. There would be no measurable direct or indirect effects to fish habitat at the watershed scale, as any measurable effects would be localized.

At the project level, activities associated with Alternative B would *negatively affect* fish habitat features (discussed below) at the subwatershed project-level scale in both the short-term during project activities and within the first couple years afterwards, but also in the longer term due to changes to channel morphology and floodplain connectivity.

Sedimentation to spawning and rearing habitats generated by project activities at all sites would be short-term and localized, and would not exceed transport capacity of the streams at the sites. However, because fill and riprap would be replaced at the Downey and Sulphur Creek Bridges within their bankfull channel widths, the potential exists with a high likelihood for future inputs of these materials to the streams (future washouts). Inputs of these quantities and sizes would exceed the transport capacity of the streams and would settle out and degrade spawning and rearing fish habitats, filling pools and smothering redds. Because the 48” relief culvert at Downey

Creek would not be replaced with a larger structure, this would add to the likelihood of a future washout of Road 26 at this site.

Large woody debris loading and routing at Downey and Sulphur Creeks would not improve. Debris currently against the Sulphur Creek bridge pier would be re-located downstream, but work at the Sulphur and Downey Bridges would be within the bankfull channel and would be adding fill and riprap. This would decrease the effective area for passage of debris. Many of the large, fallen trees upstream would not pass under any structure, should they become mobile. At Site #1, installation of a culvert to pass 100-year flood flows would improve routing of small debris, but have no effect on most trees on the site, which are larger than 48 inches. When a tree falls across an open road such as Road 26, it is often cut into pieces to gain access, which decreases its potential for instream value as a pool-forming agent and reduces its ability to dissipate high flow energy and to trap spawning gravels.

Channel morphology and floodplain connectivity with implementing Alternative B would be affected at Sites #2 and #3 by replacing fill and riprap within the bankfull channels of Downey and Sulphur Creeks. This would reduce the natural width-to-depth ratio of the site prior to construction of the road and restrict use of the alluvial fans of these streams at these sites. Natural channel processes would be hindered. Replacing the culvert at Site #1 with one to accommodate 100-year flood flows would locally improve channel morphology, while not affecting floodplain connectivity.

Critical Habitat: Activities associated with Alternative B were assessed for this environmental assessment for both Chinook and bull trout. The effect determination for activities associated with Alternative B is May Affect, Likely to Adversely Affect designated Chinook critical habitat because replacing fill and riprap into the bankfull channels of Downey and Sulphur Creeks would significantly degrade spawning and rearing habitats.

Implementing Alternative B *May Affect*, but is *Not Likely to Adversely Affect* designated bull trout critical habitat due to insignificant indirect sedimentation of substrates.

Essential Fish Habitat: Activities associated with Alternative B would not fall within the scope of the NMFS Biological Opinion (December 15, 2003), and *would be likely to adversely affect* essential fish habitats for Chinook, coho and pink salmon, by replacing fill and riprap in the bankfull channels of Downey and Sulphur Creeks, directly eliminating existing habitat and increasing the likelihood of future road failures with consequent significant degradation of spawning and rearing habitats downstream.

Alternative C

Activities associated with Alternative C would restore access. Site #1 would have 600 feet of road relocated at about 60 to 125 feet from the bank of the Suiattle River, reconfigure the Huckleberry Trailhead parking area, install a larger culvert (non-fish stream) that would accommodate 100-year flood waters, and remove about 400 feet (about 1,500 cubic yards) of the bypassed road fill. The bridges at Sites #2 and #3 would each have a concrete retaining wall constructed off the end of the existing bridge decks, which would accommodate the bankfull widths of these streams.

Federally Listed Fish

Activities associated with Alternative C would maintain the stable-to-increasing trends in Chinook 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 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 because activities would be on a terrace of the Suiattle up out of the floodplain, and the tributary stream crossed at that site is not fish-bearing. The work at Downey Creek (Site #2) would extend the width under the bridge by 17.5 feet, would be outside of the bankfull channel of Downey Creek, and would pass bankfull flows. The culvert that would be replaced at Site #2 does not have fish present at the site, but becomes a distributary channel on the alluvial fan and provides coho rearing when it reaches the Suiattle floodplain. The work at Sulphur Creek would extend the width under the bridge by 15 feet to accommodate the bankfull width, and excavation to remove the existing fill would not occur within the wetted channel. Any in-water work would be within the timing window of the WDFW Hydraulic Permit.

Not replacing fill and riprap within the bankfull channels at Downey and Sulphur Creeks 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. Conservation measures would further minimize any effects. Benefits from pre-flood conditions would not be significant to Chinook or bull trout populations.

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 C (Project Consistency Evaluation August 26, 2004).

An indirect effect from restoring vehicular access would be easier poaching access at Downey and Sulphur Creeks than currently. Enforcement would also be easier. Illegal harvest (poaching) reduces the size of the (Downey Creek, Sulphur Creek) subpopulations, though effects to the total Suiattle population as a result in selecting this alternative would be difficult to determine.

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*. The impact determination for Salish sucker is *No Impact* due to lack of habitat and species presence. Indirect effects of sedimentation would not reach chum (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 level, there would be no direct effects from activities at Site #1 because activities would be on a terrace of the Suiattle up out of the floodplain, and the tributary stream crossed at that site is not fish bearing. The work at Downey Creek (Site #2) would extend the width under the bridge by 17.5 feet, would be outside of the bankfull channel of Downey Creek, and would pass bankfull flows. The culvert that would be replaced at Site #2 does not provide passage to fish, but it does become a distributary channel on the alluvial fan and provides coho rearing when it reaches the Suiattle floodplain. The work at Sulphur Creek would extend the width under the bridge by 15 feet to accommodate the bankfull width, and excavation to remove the existing fill

would not occur within the wetted channel. Any in-water work would be within the timing window of the WDFW Hydraulic Permit.

Not replacing fill and riprap within the bankfull channels at Downey and Sulphur Creeks 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 neither 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. Conservation measures would further minimize any effects. Benefits from pre-flood conditions would not be significant to populations of sensitive or other fish species of interest.

An indirect effect from restoring vehicular access would be to make poaching easier at Downey and Sulphur Creeks than with current access. Enforcement would also be easier. Illegal harvest reduces the size of fish populations, though effects to the Skagit stocks (coho, pink), Sauk winter steelhead, Suiattle riverine sockeye, and Suiattle coastal cutthroat populations as a result of selecting this alternative would be difficult to determine.

Fish Habitat

At the scale of the Suiattle River watershed, activities associated with Alternative C 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 C would overall maintain habitat at this scale.

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 C would 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 of the Suiattle River. Conservation measures and timing of activities would minimize sedimentation into the stream at Site #1, to Downey and Sulphur Creeks, and to the overflow near Downey. The Site #1 culvert would be 200 feet from the Suiattle in non-fish-bearing waters. The Suiattle River carries a very high natural sediment load and any sediment reaching the Suiattle would not be measurable or observable due to dilution. All in-water work would occur within approved windows per WDFW Hydraulic Permit. Work is not expected to be in-water, and excavation of existing fills at Sites #2 and #3 would not be in the wetted channel. 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.

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. Many of the large, fallen trees upstream would not pass under any structure, however, should they become mobile. The existing debris against the Sulphur Creek Bridge pier would be re-located downstream to continue to provide instream benefits (rearing and holding pool formation, spawning gravel retention). Some trees removed at Site #1 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.

Channel morphology and floodplain connectivity associated with Alternative C would be improved at Site #2 and Site #3. Flooding events increased the width-to-depth ratio at Downey and Sulphur Creeks (most of both is wilderness). Project activities at Downey and Sulphur Creeks would help restore a more natural width-to-depth ratio at the bridges by allowing for average bankfull flows. Increasing the width under the bridges for flows would improve floodplain connectivity of the lower reaches of Downey and Sulphur Creeks. Activities at Site #1 would improve natural channel morphology by replacing the culvert with one that would accommodate 100-year flood flows and would not affect floodplain connectivity.

Critical Habitat: Activities associated with Alternative C were assessed for Chinook critical habitat as part of the fisheries Biological Assessment for the subunit segments of Downey, Sulphur and Suiattle. The effect determination for activities associated with Alternative C is *May Affect, Not Likely to Adversely Affect* designated Chinook critical habitat (concurrence 2/16/06), because while activities would add sediments, they would not significantly degrade spawning, rearing, or migration habitats.

Implementing Alternative C *May Affect*, *Not Likely to Adversely Affect* designated bull trout critical habitat due to insignificant indirect sedimentation of substrates.

Essential Fish Habitat: Activities associated with Alternative C were included as part of the fisheries Biological Assessment. Project activities fall within the scope of the NMFS Biological Opinion (December 15, 2003) for essential fish habitats and the effect determinations are *May Affect, 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.

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. There would be an indirect benefit by having equipment free of weeds and weed seeds before entering the National Forest. This mitigation would reduce the opportunity for the spread of invasive or noxious species, which could lessen the displacement of native vegetation in riparian areas. Native species provide shade, nutrients, and a source of woody material.

Wildlife mitigations include timing restrictions for Site #1. 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 #1.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. Most of these mitigations are conservation measures that the USFWS and NMFS Fisheries have incorporated into consultation documents with the MBSNational 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. The following table displays activities that are being considered in this cumulative effects assessment for fisheries and aquatic habitats. There are no resulting significant 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 on page 77 and Cumulative Effects on page 79) 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 may overlap with suspended sediments and/or bedload from the Boundary Bridge Repair, Suiattle Trail Repairs, Suiattle River Bridge on the Milk Creek Trail, Road Maintenance, and private land timber harvest. 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 or significant 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 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 on page 77 and Cumulative Effects on page 79 for detailed discussion and rationale.

Table 13: 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.	Yes	Yes	Construct in 2007. Potential cumulative effect due to overlap in both time and space. 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 first 2 miles of Trail 784	Suspended sediment delivery to fish-bearing waters, concussive vibrations	Yes	Yes	Construct in 2006. Potential cumulative effect due to overlap in both time and space, but 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	Yes	Yes	Construct in 2006. Potential cumulative effect due to overlap in both time and space. 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.
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 both time and space (no lingering sediment effects).
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	Noaccess 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 both time and space (no lingering effects).
Road Maintenance Routine road maintenance on Road 26 is brush every 3 years and grade/blade 2 times yearly	Hydrologic routing, suspended sediment delivery to fish-bearing waters	Yes	Yes	Planned for 2006+; 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.

Geology, Soils, Hydrology, Water Quality

In response to comments received during the 30 day comment period, this section has been enhance and refined. The description is changed from the preliminary EA, but this enhance analysis confirms the conclusions of little or no effect as a result of these proposed actions.

Landscape Features

Three main landscape features are part of the Suiattle Road repair 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 6,000 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 small glaciers that help maintain summer flows, and exert the same influence large glaciers do in the White Chuck River. 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.

Downey and Sulphur Creeks are major tributaries to the Suiattle River originating 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, in turn, producing clearer flows during summer months.

The Suiattle River encompasses approximately 343.7 square miles of land with 94 percent occupying National Forest System lands. The Suiattle Road damage Sites # 1, #2, and #3 reside in three different subwatersheds; Suiattle/Circle Peak (39 mi^2), Downey Creek (36 mi^2), and Sulphur Creek (33 mi^2), respectively.

The Suiattle River valley is a “U” shaped glacial valley with steep side-slopes and a narrow flood plain above Sulphur Creek that varies in width from 100 to 600 feet. Below Sulphur Creek, the valley bottom widens, ranging from 200 to over a 1,000 feet. Downey and Sulphur Creek basins have more severe “V” shaped slopes. 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 annul precipitation varies from approximately 110 inches in the lower valley in proximity to the repair 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 in the Suiattle River basin. These features collect sizable amounts of loose material and when they scour, during storm events, this material travels rapidly downslope 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 the road as experienced at Downey and Sulphur Creek bridges. Indirectly the debris flow can disrupt and redirect the flow of the water in the drainage and cause washouts as experienced at Site #1.

Geology and Soils

Bedrock in the project area consists of Glacier Peak volcanic rocks. The bedrock outcroppings change to various types of schist just above the proposed project sites to the north moving up slope and continue to the north changing to gneiss in the upper watersheds of Downey and Sulphur Creeks. 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 subwatersheds is low and heavy rain and rain-on-snow storms produce rapid runoff.

Flood events are common, with six flood events (1979, 1980, 1989, 1990, and 1996) occurring over the past three decades. These flood events damaged roads within the drainage and triggered discussions about closing Road 26. The decision was made to maintain road access to the current Suiattle Trailhead, developed campgrounds, numerous trailheads and dispersed recreation along the road (Suiattle WA p. 21 Chapter 3). Because of this history of flood damage, the Forest has spent considerable time and resources on road flood-proofing and upgrading. Small culverts have been replaced with larger culverts (23 sites). At a couple of sites, the road prism has been realigned or re-routed to better accommodate the Suiattle River's lateral channel migration.

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.

The October 2003 flood event was large enough, 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 that were softened from the warmest September on record rapidly melted. Within these drainages, there are small cirque lakes that are too small and high in elevation to store much runoff during storms. The following table lists the 10 highest flows recorded by the Sauk # 12189500 gauging station and converted to Suiattle River flows:

Table 14: Peak Flows of the Suiattle River

Date	Flow (CFS*)	Return Interval from Harding et al (1995)**	Simple Return Interval (*period of record)******	Probability of Occurrence in any Year %	Comment
2/26/1932	32,900	---	13 Year	---	---
12/22/33	27,200	---	20 year	5.00	---
11/27/49	39,600	25 Year	27 Year	---	---
2/10/51	30,000	25 Year	9 Year	3.70	---
12/04/75	30,200	<20 Year	9 Year	----	---
12/26/80	47,300	100 Year	40 Year	3.125	Prior to October 2003, largest event ever recorded
12/04/89	28,600	24 Year	16 Year	6.25	---
11/24/90	40,000	24 Year	16 Year	6.25	Largest flow between 1980 and 1990
11/8/95	37,900	24 Year	11 Year	9.09	---
10/21/03	50,900	100 Year	80 Year	1.25	Largest event ever recorded

**CFS = Cubic Feet per Second ;*
*** Used the Log Pearson III using records from 1911 to 2004*
**** Based on simple probability: Number of years (n) of record plus one, divided by rank (m) of the particular flood; n+l/m using records from 1918 to 2004.*

Based on the "Log Pearson Type III"[11] method and the period of record from 1911 to 2004, runoff from the 2003 storm was larger than a 100-year event (R.W. Beck, 1995). Using simple probability, and the records through (and including) October 2003, the storm produced runoff with at least an 80-year return interval. Regardless of the methodology, the October 2003 flood was the highest on record (80 years of record). In all cases, the floods noted in the above table caused significant watershed disturbance including landslides, bank erosion, and loss of riparian vegetation, as well as damage to various improvements (roads, trails, campgrounds, etc.).

Relating flood events to road damage on the Suiattle road system, damage occurred during each event from 1949, with the first significant damage occurring during the 1980 event. Between 1949 and 1980, a period of intense forest road system development, nothing approached a 25-year flood event.

There has been climate change in the past and climate change will continue to alter the hydrology of the Cascades. Predictions of higher winter runoff and increasing flooding are common (Puget Sound Action Team, 2005). The prediction is that rain rather than snow, will fall over a much greater area of the Cascades in winter producing more runoff. This can certainly sustain higher flows in the mainstem-rivers and increase the risk of flooding in the lowlands. Several factors re used to determine if greater flooding actually occurs in the upper watersheds (within the National Forest). Historically, the highest peak flows resulted from rain-on-snow events, where heavy rain and low elevation snowmelt combine to create flooding.

Factors that may act to increase hydrologic flows: a warmer climate may generate more intense winter storms than have occurred in the past; and rain rather than snow can fall on a greater proportion of the Cascades during winter storms.

11 Log Pearson is a statistical method to determine the estimated size of an event by assessing the distribution of peak flows at a gage site.

Factors that may mean less hydrologic flow: with less mid-elevation snow pack and virtually no low-elevation snow there can be less snowmelt during storm events; or at least it may occur at higher elevations that make up less of the watershed area. Other potential influences of runoff impacts may include an extensive watershed restoration program that can include road decommissioning and storm proofing and introducing large wood into stream channels. Forests that are re-growing and approaching hydrologic maturity is another condition that reduces the effect of rain-on-snow storms.

Predicting the net effect of these changing conditions is difficult however, there is the possibility that there may be a higher frequency of moderate sized floods. The design of transportation and other facilities could account for greater than normal runoff.

Channel Dynamics

Within the Suiattle River project area, three different road/channel relationships exist. At Site #1, 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 road. The Suiattle River here is relatively unconfined in a broad floodplain. Meanders, oxbow and side-channels, and islands characterize the channel. Accumulations of large woody material and gravel bars influence the channel pattern.

At Sites #2 and #3, Road 26 traverses the alluvial fans and crosses the channels of major tributary streams; Downey and Sulphur Creeks. The Suiattle River, at Sites #2 and #3 is not directly interacting with the road, except that when flows in the Suiattle River are high, water elevations in the tributaries are raised and flow under the bridges used to cross the channels is slowed. This causes water to “back up” into the tributary streams and cause over-bank flows. The result can be large, erosive eddies that form upstream of the road fill and the deposition of debris that further effects how the water passes under the bridge.

The tributaries are high gradient, confined channels with large cobble and boulder substrates. Large wood does move down these high energy channels, but tends to “jam up” and cause deep accumulations of sediment that deflect the flow into the valley walls, causing additional recruitment of sediment and wood. The trees are large enough to jam up at the bridge, although in the 2003 flood the jams formed just upstream of the bridge. The location of the jams was partially influenced by the backwater effect of the Suiattle on the tributary channels.

The third road/stream relationship is the road fill placed across the alluvial fans at Sites #2 and 3. The fill prevents over-bank floodwater from passing directly downstream; it must 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, carry sediment down the road, and cause other damage off-site.

The bankfull channel width of the Downey Creek channel was measured at three locations approximately 0.25 mile (0.4 km) above the bridge and averaged about 85 feet (approximately 26 meters). The channel width opening at the Road 26 bridge crossing was about 67.5 feet (20.5 meters), which produced about a 17.5-foot (approximately 5.3 meter) constriction to bankfull flows, not considering the width of the bridge supports.

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 bankfull channel 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.

About three channel wavelengths above Site #1, the Suiattle River channel occupies a wide valley that enables the river to move easily in a lateral direction. Channel gradient ranges between one and two percent. The river valley is comprised of lahar, glacial till, and glacial out-wash materials that erode very easily. The sections of low gradient channel, one percent or less, consist predominantly of sands, gravels, and cobbles, with an occasional boulder. Higher gradient reaches, and steeper tributaries consist a more dominant substrate of cobble and boulders, such as the Downey and Sulphur Creek channels, where gradient approaches five to six percent.

Downey and Sulphur Creek contain boulders through much of their length, creating pools, chutes, and small cascades. These segments of confined channel are considered an area where sediment and large woody debris are transported through the system. However, because the valleys are narrow and the trees large, wood jams are frequent. These jams trap large bars consisting of cobble and small boulders. During large storms large jams and sediment deposits cause the channel to shift dramatically, cutting into stream banks and valley walls. Some wood jams give way, and surges of coarse bedload move down the channel. In the case of the 2003 event, Downey and Sulphur Creek Bridge crossings underwent, not only the heavy flows and debris movement of their own basins, but also were influenced by the backwaters of the high flow in the Suiattle River.

The Suiattle River under high flows, such as the 2003 event, can recruit and mobilize large quantities of large woody debris, which in turn reconfigure the river channel pattern. Reconfiguration of the channels has occurred throughout history because of glacial, volcanic, and large magnitude flow events. Anthropogenic influences, such as bridges, floodplain fill, channel bank armoring, and vegetation removal, have had a lesser influence on the Suiattle River as a whole, but have had significant local effects.

Suiattle River Large Woody Debris (LWD)

Site #1 is located on the southern side of the Suiattle River, which has a wide valley bottom allowing the channel to laterally migrate long distances within the valley bottom. The energetic channel movement in this area produces sine wave style characteristics that reach maximum meander amplitude in relation to channel width and recruiting woody debris and sediments into the channel. Aerial photography was looked at over a time span of 21 years (1985-2004). The current level of large wood in the Suiattle River channel is at a very high volume. Large

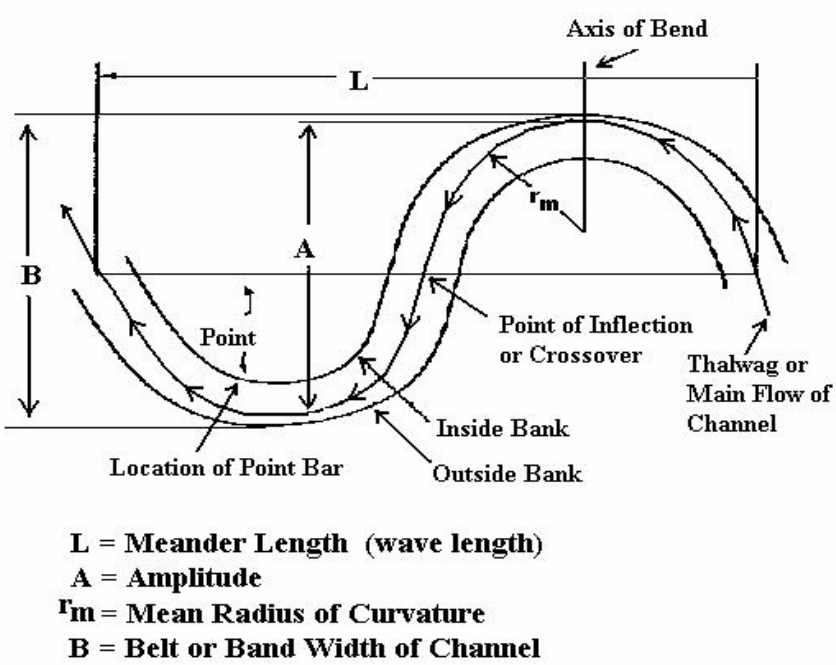
accumulations of wood follow large storm events and high flow events move the wood through the river system. This causes the large wood quantity to fluctuate naturally over time.

Rough calculations used by Leopold and Wolman to determine meander amplitude is A = 2.7w1.1 (A = meander amplitude and w = average channel width at bankfull at inflection points. This formula is applied to the reach of the Suiattle River along Site # 1 using the following assumptions and calculations:

- Average channel width at bankfull (1-2 year reoccurrence) is estimated at 150 feet (45.7 meters), which results in an amplitude of 1,217 feet (370 meters). A rough measurement of the present channel amplitude is 1,183 feet (361 meters), thus
- The present meander radius from inflection point is around 591feet (180 meters) (mr = A/2), compared with a calculated radius of 609 feet (186 meters), thus
- Theoretically, the river could continue to migrate into the slope for another 18 feet (5.5 meters).

This may put the reroute at Site # 1, Alternative C at the fringes of channel migration. However, the channel meander wavelength would continue to travel down stream naturally, thus moving away from this vulnerable site. There is some large wood beginning to create a wood jam at the lower end of this meander. If this jam stabilizes, the outer point of this meander would shift away from the slope and the road location would be buffered from the effects of river migration. Further, bank erosion is at the whim of the flow regime, stability of the bank, objects repositioning in the channel (LWD and boulders), and landslides that all can influence channel flow and direction. It would seem reasonable to assume that with the channel meander approaching its apex and moving downstream, that the trees removed for the relocation at Site #1 would not affect the amount of large wood recruited into the Suiattle River system.

Figure 4: River Meander



Floodplains

The Suiattle River cuts deeply into the surrounding mountains 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, measured at 150, 200, and 500 feet across at Sites #3, #2, and #1, respectively. These widths are 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 Downey and Sulphur Creeks.

Road 26 was originally built on the old Sound Timber Company's railroad grade in the early 1930 undergoing many relocation 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, 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. During seasonal high flow regimes constriction existed that would not accommodate bankfull channel width.

Wetlands

There are no wetlands adjacent to the damage sites or affected by the proposed actions.

Forest Canopy Conditions

Forest Canopy Conditions are an indication of hydrologic maturity. Vegetation disturbance within the identified subwatersheds for the project area has been minimal in recent years, with roads being the only continuing contributor. No further analysis is included since the alternatives would not measurably change the vegetation disturbance level and the current low disturbance level would not influence the proposed project sites.

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 in the Suiattle River on the 1998 Washington Department of Ecology 303(d) list or the 2002-2004 consolidated water quality assessment. The

proposed ERFO road repairs could introduce pollutants such as sediment and petroleum products into these 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 this subwatershed produce large quantities of sediment from active debris- 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, nevertheless assumed substantial.

With the October 2003 storm event, it is estimated that the total amount of sediment from the road fill at Downey and Sulphur crossings washout sites on Road 26 is approximately 250 cubic yards (336 tons). In comparison, Swanson (1981) estimated a range of sediment production from forested lands of 100 to 200 tons per square mile/year. At Site #1, the Suiattle River channel migrated into the toe of the alluvial fan formed by the unnamed tributary on which Road 26 was built. No additional sediment was generated than what natural migration would erode.

Glaciers and glacial terrain on Mt. Rainier are estimated to produce approximately 19,000 tons of sediment per square mile/year (Metcalf 1979). There is no known sediment production estimate for the Suiattle however, if a conservative estimate of sediment production of 10,000 tons of sediment per square mile/year is used for glacial and debris avalanche chutes, and it is assumed that approximately one percent of the Suiattle is avalanche terrain, an estimate of background sediment production in this river system would be approximately 102,053 tons of sediment[12]. Thus, the material eroded from the Suiattle sites would have contributed approximately 0.3 percent to the gross annual sediment production for the watershed. During a major flood year such as 2003, the background erosion rate would be much greater than 102,053 tons.

On a smaller scale, the watershed area above Downey Creek is about 36 square miles. Using 150 tons of sediment per square mile on forested areas and 19,000 tons for glacial and snow field erosion the Downey Creek watershed produces approximately 22,410 tons of sediment per year. In comparison, the failure at the Downey Creek Bridge in 2003 produced about 311 tons, which is approximately 1.4 percent of the normal annual sediment yield for this watershed. Thus,

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[12]*The watershed is 343.7 sq. mi.; 343.7.6 X 0.01 = 3.4 sq. mi; 3.4 X 10,000 tons = 34,000 tons.*
The remaining watershed – 343.7 X 0.99 = 340.2 sq. mi.; 340.2 X 200 tons = 68,053 tons

depending on the scale considered the sites where the road was damaged or washed away contributed about 0.3 percent of the sediment of the Suiattle River. This analysis is only a gross estimate and lacks field verification.

Generally, from Sulphur Creek to the confluence with the Sauk River the Suiattle River is highly mobile in terms of lateral migration in the wide valley bottom. Channel migration recruited and rearranged large woody debris within and adjacent to the channel during the 2003 flood. Channel and bank scour recruited sediment and repositioned large gravel bars within the channel migration zone.

Hydrology and Water Quality Environmental Consequences

Over all, the effects of repairing the washouts along Road 26 on the channel dynamics and sediment regime of the Suiattle River would be minor. Construction work would occur outside the normal high water channel and on the fringes of the valley. Very little sediment would be created during construction activities because erosion control BMPs (Best Management Practices) would be used and construction would be done during the dry season. Road fills would be outside the normal high water and consist of large rock and therefore would not produce measurable sediment.

There is very little vegetation manipulation, so no effects would occur to peak runoff rates or streamside shade that would affect stream temperatures. In a worst-case scenario, the most vegetation removal would occur with Alternative C, at Site #1, and affect less than one acre of forested ground. The primary effects of the proposed road repairs are on sediment, the use of machinery around water, and effects of structures on channel migration and floodplain function.

Long-term effects are related to maintaining the 18 miles of road beyond Site #1. Major portions of the road parallel the Suiattle River and go across lower slopes and floodplain terraces situated within, and adjacent to, the channel migration zone. There are several locations subject to washouts during floods. Areas of road within the migration zone may continue to be at risk of damage as long as the road is maintained at these locations. However, past road repairs within the migration zone have located the road farther away from the river migration such as proposed at Site #1. The actions described in this analysis are expected to greatly reduce this risk of future road washouts at these sites and maintain the existing water quality.

Alternative A (No Action):

No repair projects would occur if this alternative were selected. Road 26 would continue to be blocked to vehicle traffic at Downey Creek. The temporary road repair at Site #1 would be at risk for future washouts. Losing Site #1 to another washout would leave 18 miles of road inaccessible. Large flood events would continue to washout portions of Road 26 between MP 14.4 and the end of the road. Not repairing the road, nor restoring the damaged areas, leaves the damaged sites vulnerable to continued erosion. It would take large floods to reach much of the damaged road fills at Downey and Sulphur Creeks, but surface erosion would continue on the damaged road fills. Site #1 would remain at high risk of closure due to channel migration of the Suiattle River. Large wood would continue to jam above and on the bridge abutments at Downey and Sulphur Creeks and there is the potential that the channel could move out from under the bridge openings.

Since no work would occur beyond Site #2, there would be no machinery working near the river and no potential for oil of fuel contamination of the local waters from vehicles. Although in the present condition, the road system between Site #1 and Site #2, would be accessible until Site #1 temporary road fails.

Site #1 MP 14.4: The temporary road is located on erodable glacial till and lahar deposits above the wetted channel of the Suiattle River. Field reconnaissance of the site verified soil characteristics. Assuming the weather conditions persist with large magnitude flows, the river is likely to continue migrating into the toe of the unstable bank eroding away under the temporary road. The no action alternative leaves the road at risk of being undermined and washed out. It can be expected, that the river would continue to erode the slope below the temporary road and is expected to be washed out and be closed within five years. The road would be at risk at least until the channel dynamics cause the river to shift away from the current meander apex. It is estimated that the river apex would continue another eighteen feet, but it may be influenced by a debris jam that is forming that may shift the meander (R. Hausinger, Forest Service Hydrologist pers. comm. 2005).

The 36-inch culvert at the unnamed stream crossing would remain in place at Site #1. This culvert is undersized and perched on the unstable slope above the Suiattle River. Like the road, the culvert is at risk of failure.

This alternative may result in additional large wood recruitment over time from channel migration into the Site #1 area. The large trees located in close proximity to the active flowing river at the site are susceptible to recruitment into the channel as the river continues to erode into the toe of the slope. Underlying bedrock formation locations are not known in this area, which could deter the River's advancement. Assuming the road at Site #1 is lost, about 18 miles of road behind this location would not receive routine road maintenance. Furthermore, about 5.6 miles of the 18 miles beyond Site #1, are located in Riparian Reserves. However, portions of these Riparian Reserves are located on reasonably flat terrain, and pose no drainage problems that would deliver detrimental levels of sediments to active flowing waters.

Roads, in general, are known as chronic sediment sources even when routinely maintained. The indirect effect of leaving the road inaccessible behind this site is that ditch drainage function would progressively deteriorate over time altering surface water movement along the roads behind this site potentially exacerbating sediment yield. Without road maintenance, culverts are at risk of becoming plugged, the ditch with water overflowing across or down the road. This, in turn, would cause deep scour. Additionally, roads that are sloped would experience varying degrees of rutting from road surface wash, also redirecting surface flows. Over an extended period, probably decades, the natural processes would regenerate vegetation on most of these road surfaces and sediment production would decrease to that of a natural volume.

Site #2 and Site #3: The road fill on the alluvial fans at the Downey and Sulphur Creek Bridge would erode away more rapidly if left in the present state until a hydraulic equilibrium were satisfied in these channel systems. Downey and Sulphur Creeks would continue to attempt to migrate across the alluvial fan under flood conditions, eroding additional road fill that now has no protective riprap.

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. For example, a flood the size of the

October 2003 event, would erode considerable road fill material. An estimate might be seventy tons (50 cubic yards) at Site #2 and Site #3. This estimate is based on assumptions that the road fill would erode back from the bridge six feet (average fill width of 20 feet). In addition, a flow event as large as 2003, could overtop the road at the lowest point and flow down the ditch or road surface until the water crosses the road. An estimate of additional sediment from this washing of the road might be another 100 tons of mostly fine sediment and road subgrade material.

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.

With No Action, the two miles of road beyond Site #3 would be abandoned without treatment (see No Action Site #1 for consequences).

Alternative B

Site #1 MP 14.4: The road repair work would be very close to the high-water width of the Suiattle River. The buried riprap would deter future channel migration into the bank. However, a risk of increased bank erosion could occur upstream and downstream of the riprap wall once exposed, assuming the river continues it advancement toward this site.

This road repair would have better surface water drainage and distribution. The large amount of rock used to support the new section of road would allow better under-drainage. Construction activity occurring in close proximity to the river would increase the risk of temporary sediment delivery into the river. Proper erosion prevention techniques and work during the dry season would minimize this risk. Table 15: Estimated Sediment Generated by Repair on page 79 shows the difference between mitigated and unmitigated sediment production.

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 erosion and sediment production.

This alternative may result in a minor loss of large wood recruitment over time because of disrupted channel migration into the bank where large trees are present. The small number of affected trees and the ample supply of large woody debris already present in the Suiattle River system (as displayed in the previous 2004 aerial photograph) make this of little concern for overall availability of large wood to the river.

The 18 miles of road beyond Site #1 would remain accessible allowing proper road drainage to be maintained. Another beneficial activity for this alternative is the placement of a larger (from 24” to 48”) culvert at the unnamed tributary that would better accommodate high water flows that run directly into the Suiattle River.

About 4,800 cubic yards (approximately 3,739 m^3) of waste material would be disposed of in the rock pit at MP 3.2 on Road 2680. 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 potential for pollutant introduction from oil, gas, diesel, or hydraulics is greater than under Alternatives A or C because machinery would be operating near water. Management practices and

requirements for equipment operations and maintenance have been included, addressing methods for refueling, inspections, and operations in regards to equipment operations and maintenance that would minimize this risk.

Site #2 Downey MP 21.9: Replacement of the road approach and bridge abutment fill and riprap at the Downey Creek Bridge would re-establish the constriction of bankfull width of the channel. The previous channel width under the bridge was about 67.5 feet (20.5 meters), about 17.5 feet (approximately 5.3 meters) narrower than the bankfull channel. Placement of this material is in conflict with the agreements made in the Memorandum of Understanding with Washington State Department of Fish and Wildlife for not placing exposed riprap within the bankfull channel. The constriction increases 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. An estimate of the sediment contributed to the Suiattle River is a large flow event over tops the road approach fill is 125 tons (93 cubic yards).

With road access restored past the bridges, the type and amount of dispersed use along Road 26 and at Sulphur and Downey Creeks would resume and increase over time. Dispersed sites and Sulphur Creek campground would see continued compaction and soil disturbance. Denuded areas near watercourses would be a long-term source of fine sediment from surface erosion. Sediment from these sources has not been quantified, but is estimated at a few dozen cubic yards of fine sediment annually compared with the 102,000 tons (75,600 cubic yards) 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.

Site #3 Sulphur MP 22.9: Replacement of the road approach and bridge abutment fill and riprap at the Sulphur Creek Bridge would re-establish the constriction of channel bankfull width. Placement of this material is in conflict with the agreements made in the Memorandum of Understanding with Washington State Department of Fish and Wildlife for not placing exposed riprap within the bankfull channel. The constriction maintains high water scour conditions under the bridge and increases the risk of water overtopping the bridge approach fill. This bridge has been damaged in at least two floods (1980 and 2003) where riprap and fill scoured from the bridge approach.

No drainage relief culvert is present in the road fill or ditch line before the Sulphur Creek Campground entrance so floodwater can spill over onto the road and travel down the road towards the Sulphur Creek campground. Evidence of this from the 2003 flood was obvious during field reconnaissance. This could deliver as much as 100 tons of sediment into the Suiattle River from erosion of the roadway and within the campground.

With road access restored past the bridge, dispersed use beyond Sulphur Creek resume over time. Dispersed sites would see continued compaction and soil disturbance. Denuded areas near watercourses would be a long-term source of fine sediment from surface erosion. The amount is estimated at a few cubic yards of fine sediment annually, compared with the 102,000 tons (75,600 cubic yards) 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.

Alternative C

Site #1 MP 14.4: The road repair work would consist of moving the road a greater distance (60 to 125 feet) away from the Suiattle River requiring about 600 feet of new road construction. The disturbed area involves less than one acre (about 0.2% of the small-unnamed watershed at Site #1).

The new road construction would alter subsurface flows from cuts made in the slope. This water would be captured by the road ditch and carried away from the unnamed stream and the unstable slope below the road ditch. There would be removal of trees and vegetation on less than one acre. The exposed roadway would increase runoff and redirect surface flow distribution; however, it would be located further back from the river. This would remove the road from the imminent washout should the Suiattle River advance further into this slope.

With Alternative C, no riprap would be buried along the channel margin to restrict channel migration as in Alternative B. The temporary road (400 feet total) would be decommissioned. This alternative would not impact large wood recruitment from channel migration into the riverbank, at least until the river migrated far enough to reach the new road reroute location. If that were to occur (maybe over decades) the trees removed by the construction would not then be available for recruitment. However, compared to the massive amount of large wood in and adjacent to the river as displayed in the aerial photography and River Ranger log reports, the few trees removed at Site #1 and the low risk of that site becoming incorporated into the river, the potential loss of future large woody debris is considered minor.

The new, heavily rocked road would drain water better by not saturating and ponding as the existing compacted temporary road. Replacing the 36-inch culvert with a 48-inch culvert would better accommodate tributary high-water flows that run directly into the Suiattle River. However, the new road would redirect subsurface and surface flows near the small perennial stream. Any effect on flow in this small tributary would be negligible because the new road design characteristics would direct as much road drainage away from the small stream as possible using the road grade.

About 1,500 cubic yards of waste material would be disposed of in the rock pit at MP 3.2 on Road 2680. The rock pit does not pose any direct sediment delivery risks to nearby streams and sonly mall amounts of material would be lost in transport.

Site #2 Downey MP 21.9: This alternative would increase the opening under the bridge by about 17.5 feet (approximately 5.3 meters), to bankfull width creating greater capacity for flood flows and debris passage. This would reduce floodwater spill-over that could flow down Road 26 and cause additional road loss and more sediment delivery to fish-bearing waters. However, the existing bridge pier still poses a problem for trapping debris and causing a backup of water.

This alternative provides for additional road drainage by replacing the existing 48-inch culvert in the approach fill with an 8-foot wide culvert to relieve high flows that may threaten to overtop the road. If the culvert plugged or the volume of water was just too great, overflow water would still run down the existing road and produce some additional sediment. This would be much less likely than under Alternative B because of the increased capacity of both under the bridge and the new culvert to pass flow. Large debris could still cause a blockage that would create increased scour and a higher probability of overtopping the road during a large flood.

Restoring road access past the bridge would return the amount of dispersed use along Road 26 and at Sulphur Creek to 2003 pre-flood levels. Dispersed sites would see continued compaction and soil disturbance. Denuded areas near watercourses would be a continual source of fine sediment from surface erosion; however, the amount is minor in relation to background sediment load of the Suiattle River. These effects would be the same as under Alternative B.

Site #3 Sulphur MP 22.9: This alternative would increase the opening under the bridge by about 15 feet (approximately 4.5 meters), to just over bankfull width. This alternative would lessen the constrictive stream feature affecting channel flow that existed before the 2003 flooding. There would be more capacity for flood flow 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.

If floodwater backs up and overtops the roadway, additional erosion of the roadway and erosion and/or deposition within the Sulphur Creek Campground would occur. As in Alternative B, the amount of sediment from this source (a few cubic yards) would be masked by the background sediment in the Suiattle River.

Restoring road access past the bridge would return dispersed recreation use along Road 26 to 2003 pre-flood levels. Dispersed sites would see continued compaction and soil disturbance. Denuded areas near watercourses would be a continual source of fine sediment from surface erosion. This effect would be the same as under Alternative B.

Water Quality Alternatives B and C

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[13] addresses the amount of suspended and/or dissolved material within the water column, measured in Nephelometric Turbidity Units (NTU)[14]. 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 three sites, suspended sediments 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) thus, the only sediment expected during construction is what would be generated during culvert installation at Sites #1 and #2. During the first storm event, sediment from disturbed areas would be mobilized and combine with the background turbidity of the river. The effects from site erosion and sedimentation at each repair site are short term (1 to 2 years). The soils that may enter the Suiattle River system because of project activities consist of 30 percent suspended sediment, 65 percent sand and gravel, and five percent cobbles.

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13 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.
14 An NTU is a measure of the reduction of light intensity when a light passes through a sample of water.

Glacial lake lacustrine clay within the Suiattle River valley and tributaries is a prominent source of turbidity in the lower river. The small amount of suspended sediments from the proposed project sites that may enter the river system would likely be completely masked by the turbidity of the glacial sediments in the Suiattle River.

Sand and gravels from repair Sites #1 and #2 are not expected to travel as far as the lower repair site (Mile Post 14.4) (2.5 miles down river). Further, sand and gravels from the repair site at Mile Post 14.4 are not expected to reach the confluence with the Straight Creek. Sand and gravel entering the river system as a result of this project are only expected to affect the river during the first year or two following implementation. It is estimated that the amount of sand and gravel that would be generated at the three repair sites is approximately 0.13 cubic yards (65% of the total sediment) for Alternative C and 0.25 for Alternative B. It is anticipated that this small quantity, spread across approximately 8.5 miles of river would be indistinguishable during transport given the high background sediment of the Suiattle River.

The introduction of sediment from the proposed road repairs would not alter channel processes or aquatic habitat. The physical changes would not materially restrict channel migration, floodplain connections, peak flows, or sediment production. Aside from the high natural sediment loading, sediment produced by a repeated loss of the road fill has had the greatest effect to the river system and is the greatest continued threat. Although any introduced sediment would be transported downstream, it is not likely that this material from the repairs would be detectable within the Suiattle River.

Water quality would be maintained since the quantity of sediment expected during construction is about two 5-gallon buckets of sediment into 1,918 cubic-feet-per-second of average stream flow[15] during construction. Turbidity standards are expected to be met because of the small amount of introduced sediment during construction (about 0.19 to 0.39 cubic yards for the entire construction period[16]), the naturally high July and August turbidity, and the dilution effect of the river. There is no direct correlation between turbidity and the concentration of sediment in the water (milligrams/liter). The predictions that the turbidity standards would be met are based on the small quantity of project-introduced sediment and the dilution by the Suiattle River.

When the first storms of the fall arrive, disturbed areas would experience some erosion (mostly mitigated by mulch). The background turbidity would already be high and the sediment from this project (0.19 to 0.39 cubic yards) would be dissolved into a flow of 2,500 cubic feet per second or more of turbid water.

No water quality impacts from oil, gas, diesel, or hydraulics is anticipated because no machinery would be operating in the water. Further, management practices and requirements have been included addressing methods for refueling, inspections, and operations in regards to equipment operations and maintenance.

The following table lists the estimated sediment generated by the repair treatments under Alternatives B and C. Other erosion is expected to occur as described previously, however, that erosion is dependent on the size of future floods and the potential for wood jamming at the

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15 This estimate is based on an average of two months assuming the work occurs during July or August of the season.
16 This estimate is based on the assumption that 30 percent of the construction-generated sediment is suspended size material and that about five percent of that would actually get into the water during construction. This amounts to about two, three gallon buckets.

Sulphur and Downey Creek Bridges. The estimated background sediment production for the Downey Creek is 22,410 tons per year and for the Suiattle River as a whole is 102,053 tons per year.

Table 15: Estimated Sediment Generated by Repairs

Site	Activity	Miles	Square Miles	Erosion Rate ton/mile 2/ year	Mitigation Ratio	Deliver Ratio	Sediment to Streams (cubic yards)	Sediment Unmitigated (cubic yards)
Alternative B								
1	Reconstruct	0.06	0.0005	3000	0.3	0.60	0.2	0.7
1	Culvert Replace	0.02	0.0002	3000	0.3	0.70	0.09	0.3
2	Bridge approach	0.02	0.0002	3000	0.15	0.60	0.05	0.4
3	Bridge approach	0.02	0.0002	3000	0.15	0.60	0.05	0.4
	Total						0.39	
Alternative C								
1	New Construct	0.11	0.0009	3000	0.25	0.05	0.025	0.1
1 & 2	Culvert Replace	0.04	0.0004	3000	0.15	0.70	0.09	0.6
2	Bridge approach	0.02	0.0002	3000	0.15	0.60	0.04	0.27
3	Bridge approach	0.02	0.0002	3000	0.15	0.60	0.04	0.27
	Total						**0.195**	

Erosion rates and ratios are derived from documentation for the BOISED sediment prediction model used by R1 & R4 Forests[17]

Geology, Hydrology, and Water Quality Cumulative Effects

Following are some of the assumptions and background for the cumulative effects analysis that was conducted.

- The effects from site erosion and sedimentation at each repair site are short term (1 to 2 years).
- Long-term sediment has two sources: a) Future floods and the possibility that some road in the drainage would probably washout and b) The amount of time that sediment is in the system.
- The soils that may enter the Suiattle River system because of project activities consist of 30% suspended sediment, 65 percent sand and gravel, and five percent cobbles.
- The travel distance, per year, in the Suiattle River (Bunte and MacDonald 1998) for suspended sediment, particularly lacustrine clays, is 20km (12.4 miles), and bedload (sand and gravel) 2km (1.2 miles).

A cumulative effect occurs when the effects of a proposed project overlaps in both space and time with past, present, and future actions. The following table identifies projects within the Suiattle River watershed, and identifies whether or not there are potential effects from these projects, that could combine with the proposed project to form a cumulative effect.

17 USDA Forest Service 1981. Guide for predicting sediment yields from forested watersheds. U.S. Department of Agriculture, Forest Service, Northern Region, Missoula, MT and Intermountain Region, Ogden, UT. This guide describes erosion control techniques for forest roads and displays the relative sediment reduction of each, and combinations of techniques.

Table 16: Cumulative Effects Analysis for Sedimentation

Project	Potential Effects	Overlap		Cumulative Effect	Extent
		Time	Space		
Boundary Bridge Repair	Suspended Sediment	Yes	Yes	Yes	Construct in 2007-08. Minor short-term sedimentation. 4 miles down from Site #1, 12.5 miles from Site #2
	Bedload Sediment	No	No	No	
Suiattle Trail Repairs	Suspended Sediment	Yes	Yes	Yes	Construct in 2006. Minor short-term sediment. 1-3 miles upstream from Sites #2, 3. Amount would be inconsequential
	Bedload Sediment	Yes	Yes		
Suiattle River Trail Bridge Replace	Suspended Sediment	Yes	Yes	Yes	Construct in 2006. Minor short-term sediment. 0.25-2 miles upstream from Sites #2, 3. Amount would be inconsequential.
	Bedload Sediment	Yes	Yes		
Road 25 Closure/Storage	Suspended Sediment	No	Yes	No	Project is complete; there are no remaining sediment effects due to measures applied during implementation.
	Bedload Sediment	No	Yes	No	
Road 26 Captain Creek Culvert Replacements	Suspended Sediment	No	Yes	No	Project is complete; there are no remaining sediment effects due to measures applied during implementation.
	Bedload Sediment	No	Yes	No	
Instream treatments	Suspended Sediment	No	Yes	No	Project is complete; there are no remaining sediment effects due to measures applied during implementation.
	Bedload Sediment	No	Yes		
Road Repairs	Suspended Sediment	No	Yes	No	Project is complete; there are no remaining sediment effects due to measures applied during implementation.
	Bedload Sediment	No	Yes		
Road Maintenance	Suspended Sediment	Yes	Yes	Yes	Effects are small and overlap in time depends on timing of maintenance and subsequent storms.
	Bedload Sediment	Yes	Yes		
Forest Service Timber Harvest	Suspended Sediment	No	Yes	No	Most recent sales were small and harvested in 1995. No lingering sediment effects.
	Bedload Sediment	No	Yes		
Private Land Timber Harvest	Suspended Sediment	No	Yes	No	Diminishing effects over time. No active sales.
	Bedload Sediment	No	Yes		

Several of the projects in the vicinity of the Suiattle Road repair project have the potential to contribute to cumulative effects for suspended sediment with the Suiattle Road Repair project. These projects are the Boundary Bridge Repair, the Suiattle Trail Repairs, the Suiattle River Trail Bridge Replacement, road maintenance, and private land timber harvest.

Boundary Bridge Repair: Although the potential exists for suspended sediments cumulative effects between the Boundary Bridge replacement and the Suiattle road repair at Site #1, the size of the effect would not be measurable in the Suiattle River during the summer when the Suiattle River has a high turbidity from glacial melt. The 0.07 cubic yards of sediment from Site #1 would be diluted and dispersed by the time it reached the Boundary Bridge. This is especially true when considering the planned project implementation schedules lag by one year, which is not to say a cumulative effect does not exist, but rather the effect is lessened by the year delay. Additionally, the River gradient between Site #1 and the Boundary Bridge site is low (less than 1%) and the suspended fines are likely to fall out in less than the estimated distance (12.4 miles) and considering the distance (about 5 river miles) from Site #1 to Boundary Bridge the sedimentation effect would not be measurable. One more influential variable affecting the sediment movement is the abundance of large wood that can trap sediment as well. If the Boundary Bridge repair does extend two years beyond the Suiattle Road ERFO project work than no cumulative effect would exist.

Suiattle Trail Repairs: Calculations for natural sediment production suggest that over 102,000 tons of sediment are produced annually in the Suiattle River. The estimated potential maximum increase of 13.4 tons (10 yd^3) of sediment the first year for the trail project represents 0.013 percent increase in the sediment load of the Suiattle River. The trail project would construct 3431 feet of trail relocation between trail mile one and two (1-2 miles upstream from Site #3). The Suiattle road project is estimated to produce less than 0.2 cubic yards of sediment, so there would be no measurable cumulative effect.

Suiattle River Milk Creek Trail Bridge Replacement: This project replaces the trail bridge over the Suiattle River and is about a quarter of a mile upstream from Site #3. Although the potential exists for cumulative suspended sediment effects between the trail relocation, trail bridge replacement and the Suiattle road repairs, the size of the effect would not be measurable in the Suiattle River. This is because the amount of sediment is small and by the time it reached the Suiattle River, it would be diluted and dispersed. No more than 0.75 cubic yard of material would be expected from the trail bridge project. Further, the bulk of this material to be excavated at the bridge approach is bedrock and would produce a minuscule amount of suspended sediment. The only direct introduction of sediment would be during construction of the bridge.

Road Maintenance: Maintaining Road 26 from All Creek to the end includes blading, brushing, culvert catch basin cleanout and repairs. These activities aid in protecting the road from water damage, thus reducing risks of elevated sediment generation. The small amount of sediment generated from road maintenance is insignificant in comparison to the annual sediment production of the Suiattle River. No cumulative sediment effects are anticipated from maintenance of Road 26. Blading the road surface re-mobilizes fine sands, silts, and clays. This material can wash off the roadway during rain events if they occur during the first few weeks after blading. Beyond one or two weeks, traffic compacts the road surface, making it more difficult for normal rainfall to detach road materials. Sediment production drops dramatically once the surface is re-compacted. Road maintenance in and around the Road 26 repair sites would

be deferred until after the repair work. If a storm were to occur within one to two weeks of the maintenance and completion of the repairs, a possible cumulative effect could occur where sediments from both projects may combine; however, is difficult to quantify the effect. This is because much of the material that washes off the road surface deposits along the outer road edges. The remainder may enter ephemeral or perennial channels where additional deposition occurs. As with the Suiattle Road repairs, the small amount of sediment generated would be completely masked by the background sediment in the Suiattle River.

Private Land Timber Harvest: Timber harvest on lands outside of the National Forest occurs under the Washington State Department of Natural Resources (DNR) Forest Practices permits and regulations. A review of Forest Practices Permits shows 414 acres of harvest from 2001 through 2005, 241 acres under contract for 2006 to 2008, and an additional 210 acres proposed for harvest from 2007 through 2008 that would overlap in space and time with the proposed action. Potential cumulative effects between the proposed action and these timber sales would be limited to suspended sediment interactions in the lower Suiattle River. These private land harvests are eight or more miles downstream from Site #1 (below Tenas Creek).

Over 100 of the 414 acres of recent harvest are more than three years old, so suspended sediment from these acres has diminished due to revegetation of the units. There would be some suspended sediment generated from the 241 acres of harvest under contract and the proposed 210 acres. These harvests are administered under the DNR Forest Practices Act and Forest and Fish standards that include provisions to minimize erosion. While some of the suspended sediment from the repairs would travel as far as these private harvest areas, it would be very small and masked by the background sediment in the Suiattle River after traveling eight miles from the proposed project site. Therefore, no measurable cumulative effect would result.

The total estimated sediment from all these projects including the proposed action is less than 15 cubic yards, which is less than 20 tons. This is a very minor amount compared to the natural existing sediment. There are no water quality effects other than the turbidity and sediment discussed above, and therefore, no other water quality cumulative effects.

Riparian Reserves Affected Environment

The three sites involved with the Suiattle Road repair project are located within riparian reserves. The 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 (ROD p. C-32, 33) that are applicable include the following:

- 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, pg C-32), and b) restricting side-casting as necessary to prevent introduction of sediment to streams (1994, pg 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, pg 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, pg 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, pg C-33).

The 2005 Memorandum of Understanding with the Washington State Department of Fish and Wildlife, Permanent Bridge Installation and Replacement section states that no abutments or exposed riprap shall be placed within the bank-full channel.

The Suiattle River watershed analysis found riparian conditions in the Suiattle River as predominantly good. The percentage of impaired riparian reaches along the Suiattle River ranges from zero to 18 percent (Suiattle WA Chapter 2 pg 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.

The Suiattle River watershed analysis also states that erosion and mass wasting are a major concern with regard to roads and their relationship with riparian reserves. River terraces or floodplains are vulnerable to river erosion. A lack of adequate maintenance on these roads increases the risk of drainage failure. Sediment from road erosion and mass failures travels through the Riparian Reserves. Coarse sediment deposits in the channels and disrupts the equilibrium between sediment load and discharge in the Suiattle main stem. Important aquatic habitat can be degraded by large sediment deposition and increased channel mobility. In return, stream channel erosion and migration can cause failure of mudflow terraces crossed by roads. The October 2003, and other recent floods events have caused channel migrations along much of the Suiattle River. These floods demonstrate how volatile the floodplain is for roads.

Of the 18 miles of road beyond Site #1, about 5.6 miles are within the riparian reserves. Portions of these riparian reserves are located on reasonably flat terrain and pose no drainage problems that would deliver detrimental levels of sediments to active flowing waters. However, over the long term as road drainage features are altered, or corrected by the natural hydrologic processes, and vegetation slowly regenerates on most of the road surfaces, sedimentation would be reduced.

The three repair sites of the proposed project are on the last nine miles of Road 26. This nine-mile section of road is constructed within Riparian Reserves and has been in existence for over 70 years.

Riparian Reserve Environmental Consequences

Alternative A (No Action)

Under Alternative A, no repair activities would occur so there would be no effects to Riparian Reserves from project activities. Riparian Reserves would be affected during future flood events. Additional portions of the remaining fill materials for the road at Site #2 and Site #3 could potentially be eroded further back or washed out. Flood events can redirected stream flows wash

out adjacent forest vegetation. This process occurs naturally and is an important mechanism for recruiting large wood into the river system.

The existing road and approach fills do slightly disrupt the natural hydrologic flow path, due to fill within the bankfull channel and no action would not change it. The existing bridges and other stream crossings would not be improved to accommodate at least the 100-year flood, including associated bed load and debris. There would be no changes in stream flow from no action. Further deterioration of inaccessible road system would occur.

Alternative B

Since Downey Creek, Sulphur Creek, and the Suiattle River are fish-bearing streams, the Riparian Reserve would extend approximately 360 feet along either side of the channels (two site-potential tree heights ROD, page C-30). The Riparian Reserves at Sites #2 and #3 overlap with the Riparian Reserve of the Suiattle River. Along the one mile of Road 26 between these two repair sites is an estimated 43 acres of Riparian Reserve (not including wet areas or side channels that could extent the Riparian Reserve boundary beyond 360 feet in width). Site #1 is separated from the other (21.9 & 22.9) two sites by 7.5 miles and about 50 percent of that distance is outside of the Suiattle River Riparian Reserve. Site #1 involves about 600 feet of length, which is about five acres. This totals to about 48 acres of Riparian Reserves within the project areas. Alternative B would only affect about 0.5 acres of existing road within the Riparian Reserve and would not remove any riparian vegetation. This 0.5 acres is less than one percent of the total project area Riparian Reserve.

The existing road and approach fills do slightly disrupt the natural hydrologic flow; due to fill within the bankfull channel and Alternative B would replace the approach fills back into the channel. The width under the bridges would not be improved nor the culvert at Site #2, but the culvert at Site #1 would be improved. The repairs would constrict the stream flow under the Downey and Sulphur Bridges due to the approach fills within the bankfull channel width.

Alternative C

At Site #1, about one acre of Riparian Reserve would actually be affected by the removal of vegetation and construction of the road relocation. This is equivalent to approximately two percent of the project Riparian Reserve acres (48). Since the area that could be affected is so small, any effects on riparian function from vegetation removal because of this project are very small. Conifers trees would be removed at Site #1 ranging from 12 inches diameter to approximately 60 inches diameter. The removed trees would likely be used for fisheries, recreation projects, or for other administrative purposes. No trees would be removed at the other two sites as they are existing road and fill.

Alternative C reconstruction activities would affect microsite Riparian Reserve conditions at Site #1. The Site #1 relocation would be through Riparian Reserve, and the function of the reserves at that site would be locally impaired because trees are being removed. The 400 feet of existing temporary road would be treated and closed and while it would be allowed to revegetate, restoration to full function would take many years. The effects to woody inputs to the Suiattle would not be noticeable, as the flooding events recruited significant amounts of wood. The function of the reserves at the fifth-field watershed scale would not be measurably altered due to the small amount of riparian vegetation removed. Trees removed from Site #1 are providing

minimal, if any, shade, nutrients, and complexity to the Suiattle River. Loss of down wood is mitigated by leaving some trees down on-site. Because Road 26 lies between the trees and the river, and is on a terrace, the trees would probably not have been recruited to the river.

At Site #2 and Site #3, the existing road and approach fills disrupt the natural hydrologic flow path, due to fill within the bankfull channel and Alternative C would improve the path by pulling back the approach fill and widening the channel area under the bridges. The existing bridges would be improved to better accommodate at a 100-year flood, including associated bed load and debris as well as the culverts at Site #1 and #2. The repairs would constrict the stream flow under the Downey and Sulphur Bridges due to the approach fills within the bankfull channel width.

Further analysis is contained in the Fisheries, Hydrology, Wildlife, and Botany sections of this document.

Riparian Reserve Cumulative Effects

There are several projects that have been completed or are proposed in the same vicinity as the Suiattle road repairs. These projects are:

- Boundary Bridge Repair (4 miles downstream from Site #1)
- Suiattle Trail Repair (1-2 miles upstream from Site #3)
- Suiattle Trail Bridge Repair (0.25 miles upstream from Site #3)
- Annual road maintenance (Road 26)
- Captain Creek Culvert Replacement
- Road closure/storm proofing (Road 25 across Suiattle River from Site #1)
- Instream treatments (at Sulphur Creek; up to 16 miles west on Road 26)
- Road repairs (Road 26 MP 10.2, 12.6, 13.0, 15.8, 22.4, 22.9 [Site #3])
- Timber harvest (2,450 acres 1980-1995, 1.1 % of watershed on National Forest)
- Private land (12,979 acres, 6 % of watershed), 865 acres of harvest 2001-2008

The Suiattle Trail and Bridge repairs are reasonably close, 0.25 and 1.0 miles, respectively, to Site #3. However, such minor affects from these two projects would cause no measurable cumulative affects 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 eight years-old (1998) with no lingering effects on riparian function.

In regards to the road closure/storm proofing (also known as "storage"), the only road that is within the Suiattle River Riparian Reserve is Forest Road 25 (on the south side of the river). This project could be within the "area of potential effect" of Suiattle ERFO project involving about 10.8 miles of road starting at Circle Creek (roughly 0.7 miles upstream from the 14.4 site) and ending across the Suiattle River from the 22.9 site. With closuring and storm proofing, vegetation removal is anticipated to be only on the road cut slopes and possibly fill slopes. Once the storage is complete, vegetation is expected to grow and cover those areas that are now devoid of vegetation, thus improving conditions in the Riparian Reserve. Since the effects of Road 26

repairs are very small and the road storage effects are minor, no measurable cumulative effects are anticipated. If anything, there would be improvement in overall riparian conditions in the long term.

Instream treatments were implemented from the mid 1980s to the early 1990s in this area and have improved fish habitat and/or become ineffective because of flooding that changed the channel path, or covered the structures with bedload. There are no cumulative riparian area effects between instream structures and the Road 26 repairs.

For a cumulative effects analysis, none of the timber sales within National Forest System lands removed vegetation or affected the Riparian Reserve of the Suiattle River. Private land harvests that occurred within private in-holdings, and within the Suiattle River Riparian Reserve, total about 40 acres. The date of harvest and revegetation on these private sections is not known exactly. However, field observations confirmed new growth is several years old. Additionally, 93.5 percent of this private land activity is located over three miles downstream of the MP 14.4 site, with the remainder located between the 14.4 site and the 21.9 site. Thus, only a small (6.5 %) portion of this sale activity is in the "area of potential effect" and only increases the affected Riparian Reserve area by about five percent for the Suiattle Road 26 project.

Riparian harvests in the Suiattle River valley from the 1970s and 1980s removed streamside trees and reduced the long-term bank stability, availability of large wood, and streamside shade. These changes contribute to channel instability and meandering dynamics within the river, which in turn affect the quality of aquatic habitat. Riparian conditions are improving with time as activities in the Riparian Reserves have decreased. The proposed project and does not contribute to a measurable reduction in riparian function and therefore there is no cumulative effect of this project with other activities in the watershed.

Road maintenance does not remove vegetation, except occasional hazard trees, within the Riparian Reserves, and therefore would have no cumulative effects with Road 26 project. The Riparian Reserves function to minimize the effects of Road 26 on aquatic habitat by filtering sediments and other pollutants before they enter the stream system.

Wildlife Affected Environment

Existing Habitat

Site #1 MP 14.4: the Suiattle River is located immediately on the south side of Road 26. Habitat on the north side of the road, in which the Alternative C road relocation segment would be constructed, is a mixture of fairly open to dense late-successional forest with dense brush understory in places, a few large remnant old growth trees (about four to six feet in diameter), and mature conifer forest with high canopy closure. The western hemlock forest type includes Douglas-fir, western hemlock, western redcedar, and grand fir, some big leaf maple, and black cottonwood.

Site #2 MP 21.9: Habitat in the immediate vicinity of the Downey Creek Bridge at milepost 21.9 is made up of mid-size conifers (primarily less than 24 inches diameter) and red alder trees. Beyond about 35 yards, there is some late-successional conifer habitat, including some Douglas-fir trees about four to five feet in diameter. There are well-used dispersed campsites at both the

upstream and downstream areas on the west side of the bridge, and a very large and heavily used site at the downstream area just east of the bridge under some of the larger conifer trees.

Habitat in the floodplain and immediate vicinity of the Sulphur Creek bridge repair site is comprised of mid-aged conifer forest (mostly less than 18 to 24 inches diameter at breast height). There are a few scattered large trees further up on the slope to the west, and on the east side of the creek. The noise from Sulphur Creek is very high.

The access road (approximately 150 feet) to the unnamed quarry on Road 2680 at MP 0.3 would need to be reopened, which has young alder and vegetation that has grown in on the roadbed. No blasting or rock crushing would occur at this rock source.

Road 26 is designated as an open Maintenance Level 4 road (maintained for passenger cars). The entire road is usually below the typical winter snowline and is therefore accessible by vehicles most winters to the road-end trailhead. Before the flood damage, the road received heavy use for recreational purposes, as it provides access to two developed campgrounds, several trailheads, and numerous dispersed campsites. Currently, vehicle use still is fairly heavy to the barrier placed shortly before the Downey Creek bridge approach washout.

Federal Threatened and Endangered Species and Critical Habitat

Northern Spotted Owl: The spotted owl continues to display an apparent declining population trend across its range (as was predicted in the Forest Plan), particularly in Washington and British Columbia, Canada. However, a five-year status review of the northern spotted owl recently completed by the U.S. Fish and Wildlife Service (USFWS) concluded that the species should remain listed as threatened under the Endangered Species Act, and not moved to endangered status. The main current threats for spotted owls on the Mt. Baker-Snoqualmie National Forest appear to be residual effects on habitat from past timber harvest and competition from barred owls (Courtney et al. 2004).

The nearest historic owl activity center to each work site is located about 1.7 miles from Site #1, 1.8 miles from Site #2, and about 0.5 miles from Site #3. Some suitable owl-nesting habitat is located around Site #1, but the habitat quality is reduced due to the location on the edge of the stand next to a high-use road. Suitable nesting habitat is not immediately adjacent to the rock source at MP 0.3 on Road 2680, or at Sites #2 and #3. However, there may be suitable habitat near these sites but beyond 35 yards away. All three sites are in an owl critical habitat unit (CHU number WA-27; 42,762 acres in size). According to GIS information, about 61 percent (26,084 acres) of this critical habitat unit has forest vegetation that may provide suitable owl nesting habitat.

Marbled Murrelet: The nearest known murrelet detection to any of the three proposed project sites is located about three miles west of Site #1. The three Sites are approximately 42, 47, and 48 miles from saltwater foraging habitat, respectively. Suitable murrelet nesting habitat is located around Site #1. Suitable nesting habitat is not immediately adjacent to the rock source at MP 0.3 on Road 2680, or at Sites #2 and #3. However, there may be suitable habitat nearby these sites beyond 35 yards. All three sites are in a murrelet critical habitat unit (CHU number WA-09-e; 48,824 acres in size). According to the MBS Forest-wide Late Successional Reserve Assessment (USDA Forest Service 2001), about 61 percent (29,783 acres) of the Late Successional Reserve

that overlaps this critical habitat unit has suitable owl nesting habitat, which represents an approximation for suitable murrelet nesting habitat.

Bald Eagle: There are no known bald eagle nest sites in the Suiattle watershed. Trees that would be removed at Site #1 do not currently have branch structure capable of supporting a bald eagle nest. There are no known or suspected eagle winter roosts near the proposed project sites. Eagles are known to forage along the Suiattle River during the winter season. Relatively high eagle use occurs along the Suiattle River up to Buck Creek (just east of Site #1), with low to moderate use up to Downey Creek. Site #1 is adjacent to the Suiattle River and may provide potential for eagles to roost while foraging in the winter. However, all proposed project sites are on a high-use road, and are unlikely to receive use by eagles foraging in the winter.

Grizzly Bear: In 1997, the MBS (along with the Okanogan and Wenatchee National Forests) adopted a "no net loss of core habitat" policy for the North Cascades Ecosystem Grizzly Bear Recovery Zone, and grizzly bear core habitat (any area greater than 500 meters from an open-designated road or high-use trail) was mapped at the same time. According to this policy, any loss of core habitat after that time from new road or trail construction should be offset by creation of an equal amount of core habitat through road or trail decommissioning. The proposed project sites are not located in core habitat because they occur on a maintenance level (ML) 4 road (Road 26). Site #1 is located in the Prairie Bear Management Unit (BMU), and the Downey Creek and Sulphur Creek sites are located in the Green Mountain BMU. There are no known den sites on the Darrington District, and there is no current evidence to indicate grizzly bear presence in the Prairie BMU. In 1996, there was a Class 1 (confirmed) grizzly bear sighting in the Green Mountain BMU, east of the proposed project sites in the Glacier Peak Wilderness, which is the most recent Class 1 sighting report for the MBS. None of the proposed project sites are located in bear denning habitat because of the low elevation (about 1,100, 1,400, and 1,600 feet).

Gray Wolf: Wolves are not habitat specialists, but are dependent on a sizeable ungulate prey base. On the MBS, wolves would be largely dependent on deer as a food source. Elk occurrence is only occasional in the watershed, and deer populations are currently low compared to those that resulted from past large-scale timber harvest and the resulting early-seral habitat. The wolf prey population (deer and elk) is insufficient to support a resident reproductive wolf population, and the Forest has concluded that there is little or no indication of resident wolves west of the Cascade crest on the MBS (USDA Forest Service 2002). It is assumed that only transient or dispersing wolves might be expected to temporarily wander on to the MBS. Currently, there are no known den or rendezvous sites on the Darrington Ranger District or on the MBS. The most recent report of a wolf rendezvous site occurred in 1990 near the Cascade crest in the North Fork Sauk watershed. Additionally, the proposed project sites are on a high-use road, with high-use dispersed campsites surrounding Site #2 (old Downey Creek Campground location). The Sulphur Creek Campground is adjacent to Site #3. Consequently, none of the proposed project sites are considered potential wolf security habitat, and in essence, the MBS is not thought to provide suitable habitat for resident wolf pack territories.

Canada Lynx: Suitable lynx habitat is not present in proximity to the proposed project sites, and the project is not located in a Lynx Analysis Unit (LAU). The nearest LAU and suitable lynx habitat is approximately five and seven miles, respectively, east of the Sulphur Creek site, and approximately 12 and 14 miles, respectively, east of Site #1.

Region 6 Forest Service Sensitive Species

The species listed below are on the Regional Forester's Sensitive Animal List (updated July 2004) for the Pacific Northwest Region, and are documented or suspected to occur on the MBS. A Biologist Evaluation has been prepared (Dale Oberlag, Wildlife Biologist, January 26, 2006) and is in this project analysis file and the habitat and effects are described in the following sections.

Common loon (*Gavier immer*), American Peregrine falcon (*Falco peregrinus anatum*), Great gray owl (*Strix nebulosa*), Townsend's big-eared bat (*Corynorhinus townsendii*), California wolverine (*Gulo gulo*), Larch Mountain salamander (*Plethodon larselli*), Van Dyke's salamander (*Plethodon vandykei*), and Oregon spotted frog (*Rana pretiosa*)

For great gray owl, Larch Mountain salamander, and Van Dyke's salamander, see the Survey and Manage section below. There are no known species detection sites or suitable habitat in proximity to the three proposed project sites for the following species: common loon, peregrine falcon, and Oregon spotted frog. Consequently, no impact would occur to these three species or their habitat under any alternative, and they will not be discussed further in this document.

Townsend's big-eared bat: Townsend's big-eared bats typically require caves, abandoned mines, or abandoned wooden bridges or buildings for critical roosting habitat, particularly for maternity colonies and winter hibernacula. These features are not known in or near the proposed project sites, but the project area could provide foraging habitat. Although the species is strongly associated with caves, abandoned mines, or abandoned wooden bridges or buildings for roosting habitat, they also may occasionally use hollow trees for temporary roost sites. They feed mostly in the air along forest edges, roads, and open habitats, but can forage in almost any habitat (Johnson and Cassidy 1997). This species has been detected on the MBS, including in the Suiattle watershed, but little information is known about current populations (USDA Forest Service 2004), and no surveys have been conducted in proximity to the project area.

California wolverine: This species is found in a variety of habitats in the western United States. It appears that food abundance and availability, and avoidance of humans, human activities, and possibly high temperatures in summer, influence wolverine habitat use more than plant association types or topography (Ruggiero et al. 1994). In the Washington Cascades, wolverines occur in alpine areas down through forested zones to the lower edge of forests. Generally, they are most common in alpine and subalpine zones, but will sometimes descend into valleys, particularly in winter where large game may be available.

This species naturally occurs at low densities, with individuals ranging over large areas (Johnson and Cassidy 1997). Wolverines typically are known to inhabit large, sparsely populated wild and undeveloped or unroaded areas. They are susceptible to human disturbance, particularly near den sites. Potentially suitable denning habitat for the wolverine does not occur in or adjacent to the proposed project sites due to their low elevation. The area around the proposed project sites may provide foraging habitat for wolverine, although probably of low quality due to the low elevation and presence of the heavily used Road 26 and associated dispersed and developed recreation use and campsites. There are no verified records of wolverine near the proposed project sites or in the Suiattle watershed, however, the watershed does contain suitable habitat (USDA Forest Service 2004).

Mt. Baker-Snoqualmie N.F. Management Indicator Species (MIS)

Selected habitat types and the representative management indicator species from the Forest Plan are: (1) threatened and endangered species (bald eagle, peregrine falcon [has been delisted], grizzly bear, gray wolf); (2) old-growth and mature forest (northern spotted owl, pine marten, pileated woodpecker); (3) snags and downed logs (primary cavity excavators [i.e. woodpeckers]); and (4) big game winter range (black-tailed deer, Roosevelt elk, mountain goat).

Bald eagle, peregrine falcon, gray wolf, grizzly bear, and northern spotted owl are discussed in the above sections on threatened, endangered, and sensitive species.

Old-growth and mature forest habitat: The mature and late-successional forest habitat at Site #1 provides suitable pileated woodpecker foraging and nesting habitat. For marten, it provides suitable foraging habitat, but likely is not suitable denning habitat due to the lack of large snags and logs, and the level of human disturbance from the proximity to Road 26 and the Huckleberry trailhead and trail. Although the vegetation in the immediate area of Sites #2 and #3 is suitable for marten and pileated woodpecker foraging, no vegetation modification is necessary at these bridge repair sites.

Snags and downed log habitat: The mature and late-successional forest habitat at Site #1 provides suitable foraging and nesting habitat for woodpeckers. Habitat in the immediate area of Sites #2 and #3 also may provide suitable woodpecker foraging and nesting habitat, although no vegetation modification is necessary at these bridge repair sites.

Big game winter range habitat: Under the Forest Plan, there is no management area allocation to mountain goat winter range in or adjacent to the proposed project sites. In addition, no suitable goat winter or summer range habitat occurs in proximity to the proposed project sites.

There is no Forest Plan management area allocation to deer and elk winter range in or adjacent to the proposed project sites. Except for an occasional animal, elk are not currently known to occur near the proposed project sites or in the Suiattle watershed (USDA Forest Service 2004). Black-tailed deer do occur in the watershed, and due to the low elevation of the proposed project sites, deer may utilize the area around the proposed project sites during winter.

Survey and Manage Species

As a result of a January 2006 court ruling, Survey and Manage standards and guidelines, as they existed on March 21, 2004, recently have been reinstated.

Mollusks: The Puget Oregonian (*Cryptomastix devia*) snail is the only mollusk species for the Mt. Baker-Snoqualmie National Forest that currently requires survey for projects that may significantly impact suitable habitat. Suitable habitat for this species generally is described as low to mid-elevation (1,500 feet and lower) mature or old-growth conifer forest, within which it may be associated with a variety of cover objects. The only proposed project site where potential habitat might be impacted is at Site #1. Potentially suitable habitat would not be impacted at Sites #2 and #3 because all work would be in the existing disturbed road prism, which does not provide suitable habitat. Consequently, no survey was necessary at these two proposed project sites. Mollusk surveys were conducted at Site #1, with no detections. There are no known sites of the Puget Oregonian on the Forest.

Salamanders: The Larch Mountain and Van Dyke's salamanders are the only Survey and Manage salamander species for the Mt. Baker-Snoqualmie National Forest. However, according to the survey protocols, the survey zone for these two species is limited to south of Highway 2. Therefore, potentially suitable habitat is not present at the proposed project sites, and surveys were not necessary.

Great gray owl: There are no known sites or suitable habitat (generally, relatively large herbaceous wet meadows adjacent to mature forest) for great gray owls located in proximity to the proposed project sites. In Washington, this species is only known to nest on the east side of the Cascades in northeast Washington (Smith et al. 1997).

Bat roost sites: The Forest Plan, standards and guidelines call for the protection of caves, abandoned mines, and abandoned wooden bridges and buildings that may be used as roost sites by bats (specifically fringed myotis, silver-haired bat, long-eared myotis, long-legged myotis, pallid bat, and Townsend's big-eared bat). None of these roost site features are known to be located near the proposed project sites.

Migratory Birds/Landbird Conservation

The proposed project sites are located in the area covered by the Oregon-Washington Partners in Flight Bird Conservation Plan for west side coniferous forests. The vegetation at Site #1 provides habitat for focal species associated with mature and old-growth forest conditions, and the vegetation present along the Downey Creek and Sulphur Creek bridge at Sites #2 and #3 provide habitat for focal species associated with young to mature forest conditions. Late-successional forest habitat still is well represented in the Suiattle watershed (USDA Forest Service 2004), as are young forest conditions, and neither habitat type is a limiting habitat factor for any priority bird species of the westside coniferous forest habitat type in this watershed.

Wildlife Environmental Consequences

Federal Threatened and Endangered Species and Critical Habitat

Formal consultation with U.S. Fish and Wildlife Service under the Endangered Species Act has been completed for the proposed project. A biological assessment was prepared for the project based on Alternative C, which is considered the most impacting alternative because of the road relocation and vegetation removal.

Due to revised information on the amount of trees to be removed at Site #1 for the Alternative C relocation since the preliminary EA, the biological assessment and consultation with U.S. Fish and Wildlife Service was reinitiated.

The determination of effects on federally listed spotted owl and marbled murrelet from activities association with the relocation at Site #1 is *May Affect, Likely to Adversely Affect* for both species.

This effect call under Endanger Species Act consultation regulations required submission of a Biological Assessment (BA) to the U.S. Fish and Wildlife Service. The Biological Opinion (BO) received from the U.S. Fish and Wildlife Service concurred with the conservation measures to be implemented to protect the species to the greatest degree possible during construction activity; and stated the project implementation is not likely to jeopardize the continued existence of these

species; and does not result in the adverse modification of designated critical habitat through the removal of one acre of low-quality nesting and roosting habitat.

Northern Spotted Owl

Alternative A (No Action)

Because project activities would not occur, there would be no chance of adverse effects to spotted owls or designated critical habitat. Abandoning the road beyond Site #1, (once it presumably is undercut by the river at that site) would not result in tangible beneficial effects for the spotted owl in the near future, because it would likely take two centuries or more for the road corridor to become reforested with suitable owl foraging or nesting habitat; and, abundant foraging and nesting habitat remains in stands adjacent to the Suiattle River and the major tributary streams.

Alternative B

Under this alternative, no vegetation removal or habitat modification would occur at any proposed project site. Noise disturbance is not expected to occur at Sites #2 and #3 due to the high ambient noise level of the high-use road, and all noise-generating activity is greater than 35 yards from the nearest potential nesting habitat. Work activity at Site #1 also is not expected to cause noise disturbance to owl nesting habitat due to the existing high ambient noise level of the high-use road. Consequently, it is determined that this alternative would have no effect to the spotted owl.

All three proposed project sites are located in designated owl critical habitat. However, because Alternative B involves no habitat modification, it would have *no effect* to spotted owl critical habitat.

Alternative C

The reroute at Site #1 impacts approximately 1.0 acre of low-quality spotted owl nesting and roosting habitat that would be converted to road. The stand impacted is a single-story stand approximately 285 acres in size and is next to an existing high use road. Therefore, it is expected to be of low quality for owl nesting due to edge-related predation and potential mortality from high traffic volume. The loss of future nesting potential represents less than 3/1,000 percent of the potential nesting habitat in the stand, and 1/10,000 percent of the potential nesting habitat in the Late-Successional Reserve (LSR). The loss of 1.0 acre of low-quality nesting and roosting habitat was consulted on with U.S. Fish and Wildlife Service as a *may affect* risk determination for the spotted owl.

Noise disturbance is not expected to occur at Sites #2 and # 3 due to the high ambient noise level of the high-use road, and all noise-generating activity is greater than 35 yards from the nearest potential nesting habitat. The activity at Site # 1 is not expected to generate noise disturbance because activity would occur outside of the owl-nesting season to avoid any potential direct injury to a bird.

All three proposed project sites are within owl critical habitat. Approximately 1.0 acre of forested land that potentially could be used by spotted owls for roosting, foraging, or dispersal would be removed at the Site #1. No nest trees were identified. The habitat removed is next to an existing high-use road, and is expected to be of low quality for owl use due to edge-related predation

potential, and potential mortality from high traffic volume. According to the MBS Forest-wide LSR Assessment, the LSR that largely overlaps this owl CHU is 42,762 acres in size, with about 61 percent (26,084 acres) having suitable owl nesting habitat. Due to the small area involved and the narrow, linear nature of the road relocation, the impact to the functioning of the critical habitat at the stand and unit level is minimal. The removal of 1.0 acre would not appreciably diminish the nesting, roosting, foraging, or dispersal opportunities at the stand level. Therefore, the effects to the primary constituent elements would not appreciably diminish the functioning of the critical habitat unit for the conservation and recovery of spotted owls.

Marbled Murrelet

Alternative A (No Action)

Because project activities would not occur, there would be no chance of adverse effects to marbled murrelets or designated critical habitat. Abandoning the road beyond Site #1 (once it presumably is undercut by the river at that site) would not result in beneficial effects to murrelets because it would likely take two centuries or more for the road to become reforested with suitable nesting habitat.

Alternative B

Under this alternative, vegetation removal or habitat modification would not occur at any proposed project site. Noise disturbance is not expected to occur at Site #2 and #3 due to the high ambient noise level of the high-use road, and all noise-generating activity is greater than 35 yards from the nearest potential nesting habitat. Work activity at Site #1 also is not expected to cause noise disturbance to murrelet nesting habitat due to the existing high ambient noise level of the high-use road. Consequently, it is determined that this alternative would have *no effect* to the marbled murrelet.

All three proposed project sites are located in designated murrelet critical habitat. However, because this alternative involves no habitat modification, it would have *no effect* to marbled murrelet critical habitat.

Alternative C

The reroute at Site #1 would impact approximately 1.0 acre of mature forest that include trees with suitable branching structure for murrelet nesting. The stand impacted is a single story stand approximately 285 acres in size and is next to an existing high use road. Therefore, it is expected to be of low quality for murrelet nesting due to edge effects and edge-related predation vulnerability. The loss of future nesting potential represents less than 3/1,000 percent of the potential nesting habitat in the stand and 1/10,000 percent of the potential nesting habitat in the LSR. The loss of 1.0 acre of low quality nesting habitat was consulted on with U.S. Fish and Wildlife Service as a *may affect* risk determination for the marbled murrelet.

Noise disturbance is not expected to occur at Site #2 and Site #3 due to the ambient noise level of the high use road and all noise generating activity is greater than 35 yards from the nearest potential nesting habitat. The activity at Site#1 is not expected to generate noise disturbance since activity would occur outside of the murrelet nesting season to avoid any potential direct injury to a bird.

According to the MBS Forest-wide LSR Assessment, the LSR that overlaps this murrelet CHU is 42,762 acres in size, and about 61 percent (26, 084 acres) of the LSR has suitable owl nesting habitat, which represents an approximation for suitable murrelet nesting habitat. The project would result in the removal of potential nest trees and trees greater than one-half site potential trees within 1.0 acre at Site #1, which are constituent elements of murrelet critical habitat. However, this removal would occur in low quality habitat due to potential mortality from high traffic volume and edge related predation. The number of nest trees and one-half site potential trees impacted is very small in relation to the total number these types of trees in the affected stand and within the critical habitat unit. For these reasons, the loss of these constituent elements would not adversely affect the critical habitat unit's ability to contribute to the recovery of marbled murrelet.

Bald Eagle

Alternative A (No Action)

Because project activities would not occur, effects to bald eagle would not occur.

Alternative B

Under this alternative, no vegetation removal would occur at any of the proposed project sites, and all work activities would occur outside of the eagle wintering season (October 31–March 15). Therefore, it is determined that this alternative would have no effect to the bald eagle.

Alternative C

There are no known bald eagle nest sites in the Suiattle, so the project activity would occur at distances greater than 1.0 mile from any known active nest site and is not expected to result in disturbance to nesting eagles. Because construction activities would occur during the summer and early fall, there would be no disturbance to foraging or roosting eagles during the winter.

No known nesting or winter roost habitat would be affected by the project. The forest stand at Site #1 is not considered suitable for an eagle night roost due to exposure of the stand to prevailing weather from the southwest, and exposure of the stand to the open area created by the braided channels of the Suiattle River. The modification of the forest stand at Site #1 therefore, would not diminish the value this forest stand as a potential night roost.

Grizzly Bear

Alternative A (No Action)

Under this alternative, the road and bridge repairs would not occur and existing conditions would remain unchanged. Currently, the BMUs, as well as the Darrington Ranger District, appear to be unoccupied, and the project area does not provide core bear habitat. Because project activities would not occur, effects to grizzly bear would not occur.

Over the long term, however, if the road at Site #1 is not repaired and is undercut to the point where this becomes the new road end, de facto core habitat may possibly be gained along Road 26 for the approximate nine miles to the current road end. However, this assumes that the number of parties per week that would travel beyond Site #1 to access existing trailheads would fall

below 20 per week (the threshold above which a trail does not meet core habitat definition) due to the extended distance to reach trailheads.

Alternative B

As noted previously, there are no known den sites on the Darrington District, and grizzly bears currently appear to be absent from the Prairie and Green Mountain BMUs. The project area does not contribute to bear core habitat or denning habitat, and the road and bridge repairs would not change core habitat availability or open road density. For these reasons, no impacts are expected for grizzly bear or bear habitat.

Alternative C

Core areas (areas > 500 meters from an open road, motorized trail, or high use trail) are important for grizzly bear survival and use of important foraging areas is often higher in core areas. There would be no change in core area resulting from the proposed actions. There are no known den sites on the Darrington District, and none of the proposed project sites are located in bear denning habitat because of the low elevation (about 1100, 1400, and 1600 feet). No high quality foraging habitats occur near the proposed project sites. Although some forest habitat would be affected, this small amount of low quality habitat adjacent to a very high use road is expected to have no impact on the Prairie BMU's habitat quality. Therefore, it is determined that this alternative would have *no effect* to the grizzly bear.

Gray Wolf

Alternatives A, B, and C

Due to lack of adequate prey base, the project area does not provide suitable wolf habitat. There would be no changes to wolf habitat (denning, rendezvous, or security habitat) or to prey base for any of the alternatives. The effect determination is no effect for all alternatives.

Canada Lynx

Alternatives A, B, and C

Because there is no suitable lynx habitat in or near the project area, no impacts would occur to lynx or lynx habitat. The effect determination is no effect for all alternatives.

Region 6 Forest Service Sensitive Species

Townsend's big-eared bat

Alternative A (No Action)

No critical roost habitat features (i.e. caves, abandoned mines, or abandoned wooden bridges or buildings) are known to be present in the project area. Potential foraging habitat is present along the road corridor, but under this alternative, no project repair activities would occur and no ground disturbance or vegetation manipulation would occur. Consequently, no impact would occur to the Townsend's big-eared bat or to potential foraging habitat.

Alternative B

There are no caves, abandoned mines, or abandoned wooden bridges or buildings in or near the proposed project sites. Additionally, the road repair at Site #1 would not cause any reduction in foraging habitat, and foraging habitat is not likely a limiting factor for this species. Due to the absence of critical roosting habitat and the lack of habitat impact, this alternative would have no impact to the Townsend's big-eared bat.

Alternative C

There are no caves, abandoned mines, or abandoned wooden bridges or buildings in or near the proposed project sites. The road relocation at Site #1 would not cause an appreciable reduction in foraging habitat, and foraging habitat is not likely a limiting factor for this species. Although 64 to 70 trees would be removed from a 1.0-acre linear corridor for the road relocation segment, only one larger snag (30 inches dbh) would be removed. Due to the absence of critical roosting habitat and the lack of habitat impact, this alternative would have no impact to the Townsend's big-eared bat.

California wolverine

Alternative A (No Action)

The area around the proposed project sites may provide potential foraging habitat, but under this alternative, no project repair activities would occur and no ground disturbance or vegetation manipulation would occur. Consequently, no impact would occur to wolverine or to potential foraging habitat.

Alternative B

Denning habitat is not present in or near the three proposed project sites due to their low elevation, as well as the level of human activity associated with Road 26. In addition, the road repair at Site #1 would not cause a reduction in foraging habitat availability. Due to the absence of denning habitat and the lack of habitat impact, this alternative would have no impact to wolverine.

Alternative C

Denning habitat is not present in or near the three proposed project sites due to their low elevation, as well as the level of human activity associated with Road 26. In addition, the road relocation at Site #1 would not cause an appreciable reduction in foraging habitat availability. Due to the absence of denning habitat and the lack of habitat impact, this alternative would have no impact to wolverine.

Mt. Baker-Snoqualmie N.F. Management Indicator Species (MIS)

Effects to bald eagle, grizzly bear, gray wolf, and northern spotted owl have already been discussed above in the section on federal threatened and endangered species.

Old-Growth and Mature Forest

Alternative A (No Action)

Because project activities would not occur, impacts to old-growth and mature forest MIS (pine marten and pileated woodpecker) would not occur.

Alternative B

The proposed road and bridge repair activities would not impact old-growth and mature forest habitat because this alternative does not include any vegetation disturbance or habitat alteration. No impacts are expected to pileated woodpeckers, pine martens, or their habitat.

Alternative C

Under this alternative, the proposed project would not cause negative effects to pine marten, pileated woodpeckers, or population viability for these species because the proposed project does not include appreciable habitat alteration. Site #1 does have some mature and late-successional forest, but this habitat type is abundant in the watershed, and habitat modification is limited to the removal of vegetation from only 1.0 acres for the road relocation corridor. Presently, the watershed contains approximately 127,312 acres in the large conifer habitat structure class (USDA Forest Service 2004).

Snags and Downed Logs

Alternative A (No Action)

Because project activities would not occur, effects to snag and log habitat MIS [primary cavity excavators (i.e. woodpeckers)] would not occur.

Alternative B

The proposed road and bridge repair activities would not have any impact to snag and log habitat because the project does not include any vegetation disturbance or habitat alteration. Consequently, no impacts are expected to woodpeckers or their habitat.

Alternative C

Under this alternative, the proposed project would not cause negative effects to woodpeckers or woodpecker population viability because the proposed project does not include appreciable habitat alteration. Habitat modification is limited to the removal of vegetation from only 1.0 acres for the road relocation corridor at Site #1.

Big Game Winter Range

Alternative A (No Action)

Because project activities would not occur, effects to big game winter range MIS (mountain goat, deer, and elk) would not occur.

Alternative B

Mountain goat habitat is not present in proximity to any proposed project site, and no impacts would occur to goat habitat under this alternative. Impacts would not occur to deer or elk winter range habitat because elk currently are not present in the watershed, and this alternative involves no vegetation removal or habitat modification. In addition, the project work would occur outside of the big game wintering period.

Alternative C

Mountain goat habitat is not present in proximity to any of the proposed project sites, and no impacts would occur to goat habitat under this alternative. Impacts would not occur to deer or elk winter range habitat because elk currently are not present in the watershed, and this alternative does not involve appreciable vegetation removal or habitat modification. Although deer may use the vicinity of the proposed project sites during winter, project work would not occur during the wintering period, and the very limited amount of vegetation removal (1.0 acres) at Site #1 is not expected to impact deer winter range habitat conditions.

Survey and Manage and Other Species

Mollusks

Alternative A (No Action)

The Puget Oregonian (*Cryptomastix devia*) is the only mollusk species for the MBS that currently requires survey for projects that may significantly impact suitable habitat. Because project activities would not occur under this alternative, effects to the Puget Oregonian snail or its habitat would not occur.

Alternative B

Under this alternative, the proposed project would not cause negative effects to the Puget Oregonian because this alternative does not include any habitat alteration. All proposed project activities would take place in the existing road prism, which does not include any potentially suitable habitat.

Alternative C

Potentially suitable habitat for the Puget Oregonian snail is not present at Sites #2 and #3, and surveys were conducted at Site #1 without detections. Therefore, impacts to the Puget Oregonian would not occur under this alternative.

Salamanders

Alternatives A, B, and C

The proposed project sites are not located with the survey zones for the Larch Mountain and Van Dyke's salamanders. Therefore, potentially suitable habitat is not present at the proposed project sites, and impacts to these two salamander species would not occur under any alternative.

Great Gray Owl

Alternative Alternatives B and C (Action Alternatives)

There are no known sites or suitable habitat for great gray owls located in proximity to the proposed project sites. Therefore, impacts to great gray owl would not occur under any alternative.

Bat Roost Sites

Alternatives A, B and

No caves, abandoned mines, or abandoned wooden bridges and buildings are located in or near the project area. Therefore, no impacts would occur to these bat roost types under any alternative.

Migratory Birds/Landbird Conservation

Alternative A (No Action)

Project activities would not occur, so effects to migratory birds or habitat would not occur.

Alternative B

Under this alternative, the proposed project would not cause negative effects to landbird populations because this alternative does not include any habitat alteration.

Alternative C

Under this alternative, the proposed project would not cause negative effects to landbird populations because the proposed project does not include appreciable habitat alteration. Site #1 does have some mature and late-successional conifer forest, but this habitat type is abundant in the watershed, and habitat modification is limited to the removal of vegetation from only one acre for the road relocation corridor.

Wildlife Cumulative Effects

Alternative A (No Action)

For all wildlife species discussed in this document, because project activities would not occur under this alternative, potential cumulative effects would not occur.

Alternative B and C

Spotted owl, marbled murrelet, and bald eagle: The assessment area for this analysis is the Suiattle watershed (219,951 acres). This area was chosen because watersheds are customary units defined by ecological and topographical factors, rather than political or land ownership boundaries, and so they are well-suited for broader-scale analyses, such as a cumulative effects analysis. The MBS completed a watershed analysis for this area in 2004 (USDA Forest Service 2004), and relevant maps for different resources are located in this document, a copy of which is located at the Skykomish and Darrington Ranger Station.

Land ownership in the Suiattle watershed is approximately 94 percent Forest Service (206,972 acres) and six percent private (12,979 acres). The Forest Plan management allocations in the

Suiattle watershed are: 70 percent wilderness, 19 percent Late-Successional Reserve (LSR) and Administratively Withdrawn, two percent Congressionally Withdrawn (Wild and Scenic River designation), and 3 percent matrix (or available for timber harvest). Consequently, the vast majority of the Suiattle watershed (91%, and 97% of the Forest Service lands) is in the Forest Plan land allocations that would preclude future project activities that might cause appreciable adverse impacts to owl, murrelet, and eagle habitat.

Table 17 below displays other past, present, and reasonably foreseeable future actions that have occurred or are expected to occur near the proposed project sites or in the Suiattle watershed and that were determined to warrant consideration for this analysis. Of the projects listed, only the previous Forest Service timber harvest (none since 1995) and private-land timber harvest would have resulted in any substantial habitat removal. No timber harvest is planned in the reasonably foreseeable future on MBS lands near the proposed project sites or in the watershed.

Other activities have occurred in the watershed, including culvert replacements for fish passage, Road 25 closure/storage, past ERFO flood repair road treatments, road maintenance, and instream treatments. However, these types of projects typically do not remove suitable habitat for owls, murrelets, and eagles, or they result in the removal of only very minor numbers of trees. They may cause temporary noise disturbance to suitable nesting, roosting, or foraging habitat, but they do not cause long-term impacts, such as from habitat removal or alteration. Therefore, only impacts from habitat modification are considered relevant for this analysis. Of the private lands within the Suiattle watershed, virtually all of it is located in the western portion outside the Forest boundary along the lower reach of the Suiattle River. Private land activities primarily include timber harvest, but this is fairly limited relative to the assessment area (6% of the watershed is private lands).

Alternative C (Only)

The only potential impacts to habitat from the proposed project for all three species would occur at Site #1 removal of one acre of low-quality owl and murrelet nesting habitat and potential eagle roosting habitat for the road relocation). Therefore, potential effects from the proposed project are minor in scope. Effects from past, current, or reasonably foreseeable projects or activities on Forest Service and private lands within the assessment area also are minor in scope, relative to the habitat availability within the assessment area. Presently, the watershed contains approximately 65,658 acres of owl nesting habitat and an additional 20,125 acres of owl foraging habitat, 63,156 acres of murrelet nesting habitat, and 127,312 acres in the large conifer habitat structure class (USDA Forest Service 2004).

Table 17: Other past, present, and reasonably foreseeable activities.

Project/Activity	Extent/Description	Comments
Boundary Bridge	Replace Rd 25 bridge across Suiattle River	No habitat removal – all work planned in existing road prism for 2007.
Suiattle Trail Flood Repairs	Trail relocation along first 2 miles of the Suiattle River Trail 784	Implementation in 2006. No habitat removal.
Suiattle River Bridge Replacement/Milk Creek Trail	Replace bridge across Suiattle River on Milk CreekTrail 790	Implementation in 2006. No habitat removal.
Road 25 Closure/ Storage and other road maintenance/restoration projects	2.5 miles of waterbars and culvert removals	Some benefit of road closure (reduced potential for disturbance) to eagle roosting and foraging habitat along the south side of the Suiattle River.
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.

Past activities that impacted owl and murrelet habitat included timber harvest on private land (up to 12,979 acres) and Forest Service timber harvest units (7,810 acres). The Forest Service harvest units (ranging in age from approximately 10 to 75 years) would not provide any suitable owl nesting, roosting, or foraging habitat, or murrelet-nesting habitat, due to the young age. For eagle, only the very oldest of these stands may possibly provide eagle roosting habitat, although this is unlikely, and more likely eagles would use older stands available in the watershed.

These activities have impacted approximately 20,789 acres total in the watershed. Because of the very limited amount of proposed habitat removal (one acre) and the amount of existing suitable habitat in the watershed, impacts from the proposed project, when added to those from past, present, and reasonably foreseeable projects, do not pose appreciable cumulative impacts to owl, murrelet, or eagle habitat in the assessment area. Consequently, the proposed Suiattle Road 26 Repair project would not lead to appreciable cumulative impacts to spotted owl, marbled murrelet, or bald eagle.

Alternative B and C

For all other wildlife species discussed in this document, it was determined that no appreciable impacts are expected under this alternative due to absence of suitable habitat near proposed project sites and the lack of appreciable vegetation or suitable habitat removal. Consequently, the Suiattle Road 26 Repair project is not expected to contribute to or lead to significant cumulative impacts to these wildlife species.

Botany Affected Environment

The vegetation around Site #1 is 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.

A Level 5 (intuitive controlled) botanical survey was conducted at Site #1 on June 16, 2004. 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. A complete species list can be found in the botany files at the Darrington Ranger Station.

Sites #2 and #3 will not receive botanical surveys. All proposed repairs to those sites are confined to the road prism, which is not considered suitable habitat.

As noted in Chapter 1, Relationship to Forest Plan and Other Documents, on January 9, 2006, a U.S. District Court decision reinstated the 2001 ROD that amended the standards and guidelines for survey and manage species (including protection buffer species and other mitigation measures). This includes any amendment or modifications to the 2001 ROD that were in effect as of March 21, 2004. The latest modification was the December 2003 Table 1-1 species list update from the Interagency Annual Species Review.

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 #1 does not require additional botanical field surveys.

No lichens, bryophytes, or vascular plant species on the December 2003 Survey and Manage species list were found during the 2004 surveys at Site #1. A review of the Botany database shows a known site of the Survey and Manage lichen Nephroma bellum near the Site #3, but it is several hundred feet away from the road. There were no known sites at Site #2.

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 #1 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.

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 survey at Site #1, there would be No Impact to individuals, populations, or species under any of the Alternatives. Because suitable habitat is not present at Site #2 and #3, 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 C because of the amount of ground disturbance that would be needed. Weed spread would occur at lower levels under either of the other two Alternatives as well 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 C scenario. 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 three years. Other populations of tansy ragwort exist along the Grade Creek Road, and have been hand-pulled for four years. 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, these infestations were sprayed with herbicide, requiring a follow-up for a predicted two years.

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, establishing competitive and desirable plants along the roadside (specified seed mix) helps prevent establishment of new weed infestations (Sheley and Petroff, 1999; Losensky 1989), weed free materials would be used, and equipment would be weed-free.

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. In addition, information was provided through government-to-government consultation with the local tribes, and through consultation with the State Historic Preservation Office (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 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). The Forest's responsibility to address the effects of a proposed undertaking on historic properties is fulfilled through 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.

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, 1981) 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.

The Area of Potential Effect for the proposed project was determined pursuant to Programmatic Agreement Regarding Cultural Resources Management on National Forests in the State of Washington (PA) and 36 CFR Part 800.2 (c). Surveyed locations and intensity were determined in accordance with the Forest's Cultural Resource Inventory Strategy (Hearne and Hollenbeck, 1996). A cultural survey of the project area was completed in the summer of 2004. Surveys did not identify any historic properties. Following Secretary of Interior Standards and Guidelines for Evaluation, and 36 CFR Part 63, the Forest has reached the determinations of "no historic properties".

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, deer, elk, and salmon).

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. These effects may be positive (e.g. increased forage for large game) or negative (e.g. because of habitat impacts from temporary roads). Refer to the various resource sections for discussions of environmental consequences. 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

Alternative A (No Action)

The road washout at Site #2 has limited access for elders and tribal members to traditional and cultural areas near Sulphur Creek. There would continue to be limited access. There would be no effect on historic properties.

Without any repairs at Site #1, there is a high risk that the Suiattle River would washout and the road would be closed there. The remaining nine miles of Road 26 plus an additional nine miles of other roads would be inaccessible by vehicle at that time in the future (estimated within 5 years). Eighteen miles of road would be inaccessible to vehicles and this would limit access to traditional and cultural areas by elders and tribal members.

Alternatives B

If implemented, this alternative would restore vehicle access to the end of Road 26 and to the Sulphur Creek area for elders and tribal members. There would be no effect on historic properties.

There would be a moderate risk of future road washout and loss of vehicle access at MP 14.4 since the road is in a high-risk location as it is adjacent to the Suiattle River where current river flows are directed against the bank at Site #1.

Alternative C

This alternative would have the same effects as Alternative B except there would be a low-risk of future road washout and loss of vehicle access at Site #1 since the road would be relocated further away from the river.

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 18: 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 do 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.

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. The median household income in 2000 was $35,052 and approximately 8.3 percent of households live 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 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. Much of this money is spent in their home area or area of origin,

prior to the start of the trip. Some of the money would be 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, forgotten food and supplies, restaurant meal on the way through, or forgotten gas fill ups. These assumptions would lead to the conclusion that only a small portion of the each recreation trip expenditures would actually 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

None of the alternatives would likely have an effect in the local economy that would be 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[18]. Most of the economic impact would probably depend on whether any developed campgrounds or wilderness 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 and that amount could affect the profit margin of a local retail business. 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 in Darrington for incidentals.

In summary, the economic impact on the Darrington area as a result of the alternative chosen is likely to be very small, but could impact some of the retail businesses. No action would have the greatest impact as two campgrounds and one major wilderness trailhead would not be accessed after the road erodes at Site #1. None of the alternatives would create new jobs for people, but the action alternatives would create contracts for existing companies to bid on while the No Action alternative would not. Alternatives B and C would restore access and visitor back to pre-flood levels and brings more revenue to local retail businesses from food and gas expenditures by visitors.

Socioeconomics Cumulative Effects

Since the Mountain Loop Highway, White Chuck Road, and Suiattle Roads, White Chuck Bridge, and Suiattle River Boundary Bridge are all washed out; there could be 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 seven years.

18 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).

Table 19: Visitors per Year

Year	Visitors
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, which was after the October 2003 flood washed out many roads and trails. The closure of the Mountain Loop Highway has probably reduced the number of tourists the most, with an estimated reduction of 30,000 to 45,000 vehicles per year. If half the vehicles had stopped and spent $10 each that would total $150,000 to $225,000 per year. Letters from local businesses and the Mayor of Darrington indicate that the drop in tourism has 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 roads would benefit businesses and their use of the roads (Darrington community meetings in October 2005 and January 2006).

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

All Alternatives - No burning is planned with this project so there would not be any impacts on visibility from smoke. Use of vehicles and equipment would return to previous levels.

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.

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

Alternative A (No Action)

No commitments of resources would be made.

Alternative B and C

There would be an irreversible commitment of rock that would be used for the repair projects.

Alternative C

The relocation of the road at Site #1 under Alternative C would be an irretrievable commitment of about one acre of forested area into a road. As stated above, this is not an irreversible commitment such as river shifts that remove trees and roads.

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 access to the wilderness is described in Roads and Access on page 33 and Recreation on page 44.

The nearest Inventoried Roadless Area (IRA) is Glacier Peak J 6031 (USDA Forest Service 1990, pg C-106). Its boundary lies north of Site #1, northwest of Site #2 and across the Suiattle River from Site #3. 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 4). If either Alternatives B or C were implemented, the area would continue to be roaded; effects on other resource values would be as disclosed below. If the No Action alternative were implemented, the project area would remain roaded—with some short damaged sections—for many years. No road decommissioning would be done, 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), nor would the area likely be considered for inventory for potential wilderness (as per FSH1909 Interim Directive No. 1909.12-2005-8).

Prime Farmland, Rangeland, etc.

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.

Potential Conflicts with other Jurisdictions

Several private individuals, groups, and government agencies including tribal representatives have been contacted in regards to this project. Further, 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.

Chapter 4 Consultation and Coordination

The following is the list of Forest Service staff that was part of the Interdisciplinary (ID) Team that analyzed the proposed project and its alternatives:

ID Team

Carol Gladsjo – Team Leader, Environmental Coordinator, Cultural Resource Technician
Wayne Hamilton – Engineer
Phil Kincare – Wild and Scenic River Specialist
Megan Impson – Recreation Specialist
Karen Chang – Fisheries Biologist
Ron Hausinger – Hydrologist
Gary Ketcheson – Forest Hydrologist
Dale Oberlag – Wildlife Biologist
Jesse Plumage – Wildlife Biologist
Ann Risvold – Botanist
Gary Paull – Forest Trails and Wilderness Coordinator
Cindy White – Editor

The Forest Service consulted the following individuals, federal, state and local agencies, and tribes during the development of this environmental assessment:

Federal Highway Administration
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

The following table displays some of the other groups that were consulted during scoping.

Table 20: Other Groups Consulted During Scoping

4th Corner Fly Fishers	Alpine Ascents International	Arlington Chamber or Commerce
Arlington Times	Audubon Society-N. Cascades	Audubon Society-Skagit Chapter
Backcountry Bicycle Trails	Biodiversity Northwest	Burlington Chamber of Commerce
Mayor-City of Arlington	Mayor-City of Granite Falls	Concrete Chamber of Commerce
Darrington Branch Library	Darrington Hardware	Everett Mountaineers
Ferndale Chamber of Commerce	Focus	Fun City 4x4's
Granite Falls Branch Library	Granite Falls School Board	Lynden Chamber of Commerce
Marblemount Chamber of Commerce	Monte Cristo Preservation Association	Mount Baker Hiking Club
Mount Vernon Chamber of Commerce	Mountain Madness	Mountain View Inn
Nooksack Riders	Oso Store	Pacific Crest Trail Assoc.
Pacific Northwest Trails Assoc.	Pilchuck Audubon Society	Reece Brothers Logging
Skagit Backcountry Horsemen	Snohomish County P.U.D.	Stillaguamish Nature Trails
The Mountaineers	Tom Thumb Grocery	Town of Darrington
Town of Granite Falls	Washington State Hi-Lakers	Wash. Trails Assoc.
Wash. Wilderness Coalition	Whatcom County Chamber of Commerce	Whatcom County Snowmobile Club
Whitehorse Mercantile	Wild and Scenic River Tours	Wildcat Steelheaders
Planning Dept.-Everett	Wildwater River Tours	Audubon Society-Bellingham
Federation of Fly Fishers	National Marine Fisheries Service-Portland	Miller Shingle Company
N. Cascades Conservation Council	Wash. Dept. of Fish and Wildlife-Olympia	Washington Trout
Skagit Enhancement Group	International Llama Assoc.	Seattle-Snohomish Mill
Skagit County Public Works	North Cascades Conservation Council	Pacific Northwest 4-Wheel-Drive Assoc.
Wash. Dept. of Fish and Wildlife-La Conner	U.S. Army Corps. Of Engineers	Seattle Audubon Society
Access to Nature	The Nature Conservancy	Wenatchee Whitewater Trips
Wash. Dept. of Fish and Wildlife-Mill Creek	Huck Finn River Adventures	W.O.L.F.
N.W. Steelheaders	American Alpine Institute	Skagit County Parks and Recreation
Skagit Co. Upriver Services	Wash. Dept. of Fish and Wildlife-Habitat Division	National Parks & Conservation Assoc.
Skagit Alpine Club	Wash. Dept. of Fish and Wildlife-Mt. Vernon	Wash. Dept. of Fish and Wildlife-Lands and Restoration Services Program
ORV User Association	Puget Sound Energy	Snohomish County Public Works
The Wilderness Society	Northwest Ecosystem Alliance	American Alpine Institute
Native Forest Council	Halldata Inc.	Trailblazers
Skagit River System Coop	Nooksack Salmon Enhancement Assoc.	Fidalgo Fly Fishers
Snohomish County Tribune	Volunteers for Outdoor WA.	Federation of Fly Fishers
Alpine Adventures, Wild & Scenic River Tours	N.W. Indian Fisheries Comm.	Monte Cristo Preservation Association
ORV User Association	The National Outdoor Leadership School, Pacific Northwest Branch	Sierra Club
Lind Shake	Snohomish Co. Planning-Planning & Devel. Services	Hampton Tree Farms Inc.
High Lakers	Whatcom Backcountry Horsemen	ALPS/PAS/NCCC
US Fish & Wildlife Service	North Cascades River Expeditions	Northwest Glacier Cruisers
Rivers Inc.	Audubon Society-Deming	Snohomish County Planning
USDI-North Cascades Natl. Park	Northern Toys 4WD Club, NW Glacier Cruisers Snowmobile Club	KOMO Radio and Television
Wash. State Dept. of Ecology	Wilderness Watch	Snohomish Co. Road Mtnc.
Task Force for Disabled	Wash. State Snowmobile Assoc.	
Forest Watch	Mountain School	Grandview Station
Wash. Dept. of Fish and Wildlife-Mount Vernon	Pacific Crest Trail, SW Region	Granite Falls Chamber of Commerce
ORV User Assoc.	Whatcom County Water Resources Division	Skagit Wildcat Steelheaders
Everett School District #2	Alpine Fly Fishers	Mountaineers
State of Wash. Dept. of Natural Resources	Stilly-Snohomish Fisheries Task Force	EDASC
Integrity Systems	Skagit County Commissioners	Snohomish County Surface Water Mgt.
Wash. Rec. Runners Assoc.	Rails to Trails-Washington Chapter	Traildusters
Cascades Adventures, Inc.	Northwest Fly Anglers	DNR Wash. Natural Heritage Program
IMBA	Longview Fibre Company	Seattle Times
Wash. State Dept. of Natural Resources	CORBA	Wash. Native Plant Society
NWSTC	Riverside Grocery	Evergreen REACT #2869
Town of Skykomish	Mountaineers Ski Club	Backcountry Horsemen of Wash.
Northwest Motorcycle Assoc.	EPA, Region 10	Interagency Committee for Outdoor Recreation
Wash. Wilderness Coalition	Sierra Club, Eastside Chapter	Alpine Lakes Protection Society
Adventure Press	Stevens Pass, Inc.	Everett Ski School
Lyon Ski School	Penguin Ski Club	Scenic Rivers State Park
Backcountry Bicycle Trails Club	Wash. Dept. of Ecology, Floodplain	National Campers and Hikers
Crystal Conservation Coalition	Washington State Parks and Recreation	Wash. State Hi-Lakers
Timber Watch	Iron Goat Trail	Snohomish County Parks Division
Burlington Northern Railroad	Evergreen Express	Scenic River Advisory Board
Wash. Dept. of Ecology, NW Regional Office	Pacific Northwest Four Wheel Drive	The Wilderness Society
American Alpine Club		

30 Day Comment Period and Response

A preliminary EA was circulated for a 30-day public comment period from May 13 until June 13, 2005. The EA was mailed to 27 individuals and organizations that had expressed interest that include local, state, and Federal entities, Tribal representatives, and environmental organizations.

Copies of the Preliminary EA were made available at the Darrington Ranger District and an electronic version available on the Mt. Baker-Snoqualmie National Forest website. Legal notice of the availability of the EA was published in the Everett Herald, on May 13, 2005.

Nine correspondences were received during the 30-day comment period. These letters and e-mails contained comments concerning the adequacy of the EA. The Responsible Official is considering all substantive comments that were submitted (36 CFR 215.6(b)). The following is a summary of substantive comments and concerns and a response or reference of where the concern is addressed in the EA.

Table 21: Public Comments 30-Day Comment Period

Respondent	Comment	Location in EA	Remark/Response
1)Olympic Forest Coalition (Letter – June 13, 2005)	1a) The FS failed to take advantage of ERFO funds to decommission roads that tend to regularly wash out, and with each washout, more damage to the watershed is delivered.	Decommission or Convert to Trail on page 21	Decommissioning does not meet the need of returning vehicle access to the area. Road 26 is considered a high level road to keep on the Road system.
	1b) First there is less and less money to maintain the current road system. Climate is changing, the prediction for Western Washington are for warmer summers and winters and more severe and frequent storms. This should necessitate a change in how the FS views what to do with the road system.	Road and Access Roads and Access Environmental Consequences on page 33	Designing repairs to be less susceptible to future washout is part of Alternative C and road system management. This is one of our higher level roads. Disclosure of the risk of future washouts and the cost of maintenance and repair is in the Road and Access Environmental Consequences.

Respondent	Comment	Location in EA	Remark/Response
	1c) An EIS should have been done for the three concurrent EAs the Darrington Ranger District has produced on road washouts in the same Sauk system during the same flood.	Introduction on page 1 and Project Scope on page 5	The agency is not required to analyze similar actions in the same document, unlike connected actions. In response to this comment, the exact wording from the CFR has been included in Chapter 1. No significant effects were identified during preliminary effects analysis, nor during the full analysis of this or other proposed projects. If significant effect(s) had been identified, the Forest Service would have completed an EIS.
2)Skagit River System Cooperative (Letter – June 13, 2005)	2a) No alternative was considered in detail that would upgrade the existing bridge at Downey Creek to span the entire Downey Creek floodplain with a larger bridge. The draft EA says an additional bridge span was considered but was rejected without detailed evaluation due to cost concerns.	Downey Creek Additional Bridge on page 22	The alternatives include repairs that would meet the current standards and guidelines to accommodate a 100-year flood. Adding another bridge or larger bridge would cost much more than the funding available and would not be structurally necessary to accommodate a 100-year flood. Additional information has been added to the EA.
	2b) The existing approach road fill for the bridge crosses the floodplain and limits connectivity with the Downey Creek channel. This impairs the natural processes of salmonid habitat formation during peak flow events. During the 2003 flood, Downey Creek actively eroded this road fill in two locations, and likely would have created new channels and new habitat if not prevented by the presence of the road fill. After the flood, the FS altered these channel connections in order to provide access to the bridge for heavy machinery. We believe the proposal to replace the road fill/bridge will have unacceptable consequences to federally listed fish species by limiting the natural process of habitat development on the flood plain and alluvial fan of Downey Creek.	Fisheries Environmental Consequences for federally listed species Alternative C on page 58	USFWS and NMFS concurred that at Downey Creek, building a concrete retaining wall at the end of the bridge deck and a reinforced earth wall and riprap along the replaced road fill, which would extend the width under the bridge and be outside the bankfull channel and pass bankfull flows “May Affect, (but is) Not Likely to Adversely Affect” bull trout or Puget Sound Chinook.

Respondent	Comment	Location in EA	Remark/Response
	2c) Page 49 of the EA states the preferred alternative will "restore floodplain connectivity of the lower reaches of Downey and Sulphur Creeks." We do not believe this is possible considering the alternative proposes placing road fill and concrete within the floodplain and alluvial fan of Downey Creek. It is true that the proposed concrete abutment will improve flow conditions under the bridge, but it will not restore floodplain connectivity in Downey Creek.	Fisheries Environmental Consequences for Alternative C Fish Habitat starting on page 59	Clarification was made in EA. This language came from the consultation paperwork, which uses "restore" as an option for the project effect. However, the definition for "restore" was modified from its original definition to instead mean an improvement. Use of the word "restore" was meant in light of the modified definition and was inadvertently used. In the MBS Forestwide Programmatic Biological Assessment, "restore" means "the project is likely to beneficially impact an indicator in the 'Matrix of Pathways and Indicators.' That is, an 'indicator' will be impacted in such a way that its function will be improved."
	2d) It is not clear that the proposed alternative will restore hydrological functions in the existing channel for Sulphur or Downey Creeks. Has the FS conducted hydraulic modeling to determine that the new bridge design will accommodate 100-yr flood events and associated sediment and wood debris for each channel? On what basis was the slightly additional increase in width for each bridge determined adequate?	Channel Dynamics starting on page 67 and Alternative C on page 76	A USGS formula is currently used to calculate culvert sizes to pass 100 year flood flows. Manning's equation is used to help determine if a structure will pass debris and sediment, and 5 feet is generally added for major crossings. Field measurements were taken in Downey and Sulphur Creeks and used in calculating bankfull channel width. Downey and Sulphur Creek bridges have plenty of height and opening to pass the 100 year flow, but constriction occurs from piers and approach fill. Alternative C would increase the opening under the bridges.
	2e) Tree removal from the riparian reserve at Site #1 reduces the benefit of the riparian area for salmon in the Suiattle River as a source of shade, nutrients, bank habitat, complexity, and a source of LWD.	Suiattle River Large Woody Debris (LWD) on page 68 and Riparian Reserves Environmental Consequences for Alternative C on page 84	Text added to EA. Trees removed from Site #1 are providing minimal, if any, shade, nutrients and complexity to the Suiattle. Cutting and removing these trees would impact less than one acre of local Riparian Reserve at MP 14.4, but would maintain conditions of the Reserves in the fifth-field watershed.

Respondent	Comment	Location in EA	Remark/Response
	2f) The EA states that the effects of additional LWD would not be noticeable in the Suiattle River as a result of LWD inputs from the recent flood. Does the Forest Service have data to demonstrate this? Significant amounts of new LWD were recruited to the Suiattle during the 2003 flood, however, it is not clear that an upper threshold has been reached where there is enough LWD to justify negative impacts to the riparian reserve. T&E wildlife species are addressed, but concerns for riparian trees in terms of providing habitat for T&E fish species is not addressed.	Fish Environmental Consequences Alternative C on page 58 to page 59. Suiattle River Large Woody Debris on page 68	Alternative C would maintain habitat. The trees removed at the Alternative C Site #1 relocation were evaluated as being located on a terrace outside of the future river meander and would not affect the amount of large woody debris in the Suiattle River. Additional information has been added to the EA.
	2g) The EA says: Road densities and riparian conditions in the Suiattle are good, there is no reference provided.	Fisheries Watershed-Scale Conditions starting on page 49	(Tied to the next comment.) Reference given was Smith 2003. Reference wanted was for specific watersheds. See next response.

Respondent	Comment	Location in EA	Remark/Response
	2h) Correct this statement to better reflect our understanding of landscape conditions in the Suiattle. (The statement is "Smith (2003) states that road densities and riparian conditions in the Suiattle are good.."). Watersheds such as Circle, Straight, Tenas, and Big [Creeks] have significant sediment-related impacts from roads, and there are a number of locations along the lower Suiattle mainstem that suffer from reduced riparian function. There are also a number of fish passage barriers and floodplain impairments from roads in the Suiattle basin, including Forest Road 26.	Fisheries Watershed-Scale Conditions starting on page 49	Smith (2003) supports "this statement" for road densities in the text on pages 95 ("all of the WAUs that comprise the White Chuck and Suiattle drainages are rated "good" for road density") and in Table 17 on page 183, and supports the statement on riparian conditions in the text on page 111 and in Table 17 on page 183. Smith (2003) cites Beamer et al. 2000 and data from Lunetta et al. 1997. Locations along the lower Suiattle mainstem that suffer from reduced riparian function were not identified in Smith 2003, but additional text was added to clarify that scattered areas of impairment exist. Text has been added to note sediment-related impacts from roads in these subwatersheds, citing your comment letter. The Streambed and Sediment Conditions in the Sauk Sub-Basin section in Smith 2003 says on page 94 that Tenas and Lime Creeks WAUs (which include the subwatersheds you list) are rated as unknown for sediment supply rates. Text has been added to reflect that roads in the watershed, including Road 26, (1) presents passage barriers within the watershed and (2) contributes to floodplain road density.
(3) Dale Wick Private Individual (letter 5/18/2005)	Supports the idea of using this opportunity to return the upper Suiattle to non-wilderness backcountry. With the 1984 advance of wilderness boundaries, we have very little land available for less restrictive recreation. List me as one who believes that the wilderness areas need a buffer to be used for non-road recreation.	Recreation Environmental Consequences starting on page 42	Comment noted.

Respondent	Comment	Location in EA	Remark/Response
(4) Michael Andreoni Private Individuals (e-mail 5/23/2005)	Supports Alternative C as being reasonable and cheaper, do it right so it doesn't need to be redone again soon..	Roads and Access Environmental Consequences for Alternative C starting on page 34	Comment noted
(5) Mike Torok Private Individual (e-mail 5/31/2005)	Supports Alternative C as being the best long term option.	Roads and Access Environmental Consequences for Alternative C starting on page 34	Comment noted
(6) Mike and Ruth Hardy (email	Preference is Alternative C, moving the roadbed away from the river at MP 14.4 would make the repair more likely to be permanent and minimize potential damage to river quality	Roads and Access Environmental Consequences for Alternative C on page 34	Comment noted
(6)Jim Scarborough Individual (letter 6/6/05	6a) The decision to reconstruct the road was clearly pre-ordained which violates NEPA mandates.	Decision To Be Made on page 6	A decision to reconstruct the road will be made after the deciding official has reviewed and considered the proposed actions and its alternatives. At that time a Decision Notice will document the decision. NEPA requires a proposed action be identified.

Respondent	Comment	Location in EA	Remark/Response
	6b) Much more study, attention, and detail should have been devoted to potentially converting the road into a non-motorized trail above MP 14.4 The FS is in error on page 13 wherein the no-action alternative is equated with an otherwise absent trail conversion alternative. Alternative A (no action) falls short of the management requirements necessary for a successful conversion to trail.	Decommision or Convert to Trail on page 21 and No Action on page 23	Comment noted. The EA includes clarification of the no action alternative to better reflect the effects of no road repair. Converting the road into a trail does not meet the purpose and need and is described under Alternatives Not Studied in Detail with additional detail.
	6c) The old-growth forest that would be cut at Site #1 via moving the road back under Alt. C is highly regrettable precedent for the MBS National Forest. Such clearing of this sort is well within the Wild and Scenic River protected corridor, and is likely illegal as a result. It would constitute an irreversible and irretrievable commitment of resources, contrary to statements on Page 87.	Wild and Scenic River Environmental Consequences Alternative B and C starting on page 37 and Irreversible and Irretrievable Commitment of Resources on page 108	Harvesting timber in the Skagit Wild and Scenic River is allowable. Convert one acre of forest to road is further described in Irreversible and irretrievable commitment of Resources.
	6d) Armoring and riprapping at Site #2 and #3, in excess of [existing riprap] may also be illegal.	Wild and Scenic River Environmental Consequences Alternative B and C starting on page 37	Repairs at Site #2 (Downey Creek) and #3 (Sulphur Creek) are not within the Ordinary High Water Mark of the Suiattle River and are not illegal. Additional information has been added to the Wild and Scenic River section.

Respondent	Comment	Location in EA	Remark/Response
	6e) Logging and clearing of spotted owl and marbled murrelet critical habitat units is proportionately small, but degradation of any sort may run counter to the 9th Circuit Court's decision in Gifford Pinchot Task Force v. USFWS in 2004. Please explain how the FS decision (presumably following USFWS consultation) to destroy critical habitat at Site #1 under Alt. C conforms with the 9th Circuit's ruling.	Wildlife Environmental Consequences for Northern Spotted Owl on page 92and Marbled Murrelet on page 93	Gifford Pinchot Task Force v USFWS, No. 03-35279, found that the regulatory definition used by USFWS for determining whether there is destruction or adverse modification to critical habitat was contrary to law. The biological opinion issued for the Suiattle Road Repair EA does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CFR 402.02. Instead the USFWS has relied upon the statutory provisions of the ESA to complete the analysis with respect to critical habitat. The biological opinion issued for the Suiattle Road Repair EA found that the proposed actions will not destroy or adversely modify spotted owl critical habitat. This was based on the determination that the value of critical habitat for survival and recovery of listed species is unlikely to be appreciably diminished when assessed at a stand or landscape level.

Respondent	Comment	Location in EA	Remark/Response
	6f) A parallel situation on the Olympic National Forest (Dosewallips road washout) is now subject to a full EIS following the withdrawal of two EAs. The Dosewallips conundrum features potential degradation to critical habitat for the spotted owl and adverse impacts to Puget Sound chinook. The Suiattle repair project entails these factors, and adds critical habitat for the murrelet and proposed critical habitat for bull trout to the package. The Suiattle project concerns old-growth tree removal in a Wild and Scenic River corridor. Clearly the Suiattle project's anticipated environmental consequences are as significant or even more than the Dosewallips project. Such a complex (and controversial) decision requires an EIS.	Wildlife Environmental Consequences for Northern Spotted Owl on page 92and Marbled Murrelet on page 93 and Project Scope on page 5	The USFWS has issued a biological opinion for the "May Affect, Likely to Adversely Affect" determinations for the marbled murrelet and its designated critical habitat. Although adverse effects were identified for some species such as the spotted owl and marbled murrelet, the analysis did not identify significant effects. If significant effect(s) had been identified, the Forest Service would complete an EIS.
	6g) The goal of access (particularly automotive) for recreational, economic, or administrative wants must be submissive to the integrity of the landscape and its waters, in perpetuity.	Need for Action on page 3	Comment Noted

Respondent	Comment	Location in EA	Remark/Response
(7) Pilchuck Audubon Society- Katherine Johnson (Letter- June 13, 2005)	7a) We strenuously object to the timing of releasing these 3 critical and interconnected documents simultaneously, with only 30 days (less, depending on when one actually received said document) to submit comments. It is unfair to expect in so short a time. This type of planning does not benefit the public interest.		Comment Noted. The 30 day comment period for Gold Mountain Road Repair was April 30 to May 31, Mtn. Loop Road Repair was May 15 to June 15, and Suiattle Road Repair was May 13 to June 13. The schedule for the environmental analysis and ERFO funding is similar as they were started at the same time and plan to be completed in similar timeframes.
	7b) A full Environmental Impact Statement would allow a much more comprehensive and holistic analysis of these projects, all of which resulted from a single flood event. An EIS would provide a better overview of cumulative effects and interactions between the various activities..	Project Scope on page 5	The Forest Service decided that an EA would fully analyze and disclose the effects of the project. No significant effects were identified at the initiation of the proposed projects, nor during the analysis of this or other proposed projects within the Sauk River watershed. If significant effect(s) would have been identified, the Forest Service would have changed the documentation to an EIS to analyze and disclose any significant effects.

Respondent	Comment	Location in EA	Remark/Response
	7c) These projects [Mtn. Loop, White Chuck, and Gold Mountain EAs] would have significant cumulative effects not only on access and road management as mentioned in the EA (p. 58) but on water quality, fish and other wildlife habitat, road density, and recreational opportunities.	Cumulative Effects Roads and Access on page 34, Recreation on page 46, Fisheries on page 62, Hydrology on page 79, Riparian Reserves on page 85, Wildlife on page 99, and Appendix C. Project Scope on page 5	No significant effects were identified during preliminary effects analysis, nor during the full analysis of this or other proposed projects within the Suiattle River watershed. If significant effect(s) had been identified, the Forest Service would have completed an EIS.
	7d) The analysis should consider rebuilding this bridge for pedestrian and horse use only, which would have less impact on the fish habitat of Downey Creek. This alternative did not receive adequate evaluation in the EA.	Decommision or Convert to Trail on page 21	40 CFR 1500.2 (e) and 1502 do require a full range of reasonable alternatives. The Forest Service supports that the Alternatives considered in the Suiattle Road 26 Repair EA were reasonable solutions to restoring vehicle access for administrative and public use to the project area. Decommision or Convert to Trail was considered and additional information was added to the EA.
	7e) This road is prone to flood damage, and it would be far less expensive economically and environmentally to maintain it as a trail. This would benefit fish and wildlife, water and air quality, and recreational interest.	Decommission or Convert to Trail on page 21	A trail does not meet the purpose and need of returning vehicle access to the area.

Respondent	Comment	Location in EA	Remark/Response
	7f) On page 3, the EA states that separate analyses were chosen because "the actions may be similar in scope, but are not considered to be connected actions, or have cumulative actions or effects that may cause significant impacts. Similar actions are those that when viewed with other reasonably foreseeable or proposed agency actions have similarities that provide a basis for evaluating their environmental impacts together, such as common timing or geography." This applies to the Gold Mtn. Road, Mtn. Loop Highway, Suiattle River Road 26, and White Chuck Road, all of which washed out in the same flood event, and shares a common watershed. They also share connections between many of the road networks.	Cumulative Effects Roads and Access on page 34, Recreation on page 45, Fisheries on page 62, Hydrology on page 79, Riparian Reserves on page 85, Wildlife on page 99, and Appendix C. Project Scope on page 5	The agency is not required to analyze similar actions in the same document, unlike connected actions. In response to this comment, the exact wording from the CFR has been included in Chap. 1. No significant effects were identified during preliminary effects analysis, nor during the full analysis of this or other proposed projects located within the Sauk River watershed. If significant effect(s) had been identified, the Forest Service would have completed an EIS.
	7g) Recreation effects must consider the needs for low-elevation, disabled user-accessible, and non-strenuous non-motorized trails.	Project Scope on page 5 and Recreation Environmental Consequences on page 45	The purpose and need of this project is to provide vehicle access on Road 26. Considering low-elevation, disabled user-accessible, and non-strenuous, non-motorized trails is outside the scope of this decision. Additional recreation effects on disabled users have been added to the EA.

Respondent	Comment	Location in EA	Remark/Response
Marc Bardsley North Cascades Conservation Council Letter June 13, 2005	8a) The EA states (p. 13) that "Decommissioning Suiattle Road 26 or converting the road to trail at Downey Creek…was considered, but was not studied in detail because it is outside the scope of the purpose and need." The EA also implies that the issue of maintaining the Suiattle road open to the current end, despite a history of chronic economic and environmental damage and ERFO repairs, was settled definitively by the 1992 EA following a previous round of road washouts. Given current regulatory requirements including the NW Forest Plan's Aquatic Conservation Strategy, and listing of bull trout and Puget Sound Chinook—both found in the Suiattle and its tributaries, as well as the listing of marbled murrelet and the spotted owl, excluding an alternative that would decommission the Suiattle Road is arbitrary and contrary to the proper application of NEPA.	Decommission or Convert to Trail on page 21	Decommission or Convert to Trail was considered and additional information has been added to the EA.
	8b) The EA states (p. 13) that decommissioning alternatives would be similar to the required no action alternative. Unlike the no action alternative, decommissioning would potentially remove approach fill and restore fill floodplain function in Downey Creek and Sulphur Creek. Conversion to trail would also presumably consider methods of re-bridging Downey and Sulphur Creeks to accommodate foot and horse traffic.	Decommission or Convert to Trail on page 21 and No Action on page 23	Comment noted, the EA has been enhanced in response to this comment.

Respondent	Comment	Location in EA	Remark/Response
	8c) The EA (p.52) implies that future repairs to flood-damaged roads are a reasonably foreseeable consequence of keeping it open. The approximate costs and consequences of these future damage and repair events must be considered in keeping the road open to the end, as opposed to decommissioning a very short stretch of it. The almost washed out portion at MP 21.8 is sandwiched between a steep bank and the outside of a river bend, this spot is a good candidate in the near future for the next "emergency" repair which would cause incremental damage to aquatic resources and critical terrestrial habitat.	Flood Damage starting on page 31	Due to the steep nature of the country in the Pacific Northwest, almost all roads follow rivers and streams because of their lower gradient. Future washouts and slides in roadways are expected and are the reason that road maintenance costs are higher in the northwest. This is true for two reasons, the mountains are steeper and the rainfall is higher. Unfortunately ERFO funds do not allow us to repair sites that we may expect damage in the future.
	8d) The proposed re-route at mile 14.4 would be a new road alignment in riparian reserve and in designated critical habitat for spotted owl and marbled murrelet. These are obvious adverse effects, in the form of permanent forest destruction in the road corridor, and fragmentation of habitat. If the re-route is to be defensible, the adverse effects need to be mitigated, and minimized, and we noted no effort to do so.	Mitigation Measures for Wildlife on page 27. and Wildlife Environmental Consequences for Spotted Owls on page 92 and Marbled Murrelet on page 93. Irreversible Commitment on page 108.	The Biological Opinion issued by the USFWS did acknowledge the Forest's mitigation to prevent direct impacts to potentially nesting spotted owls and marbled murrelets, which requires that no suitable habitat will be felled at MP 14.4 during their breeding seasons. No further terms and conditions were identified by the USFWS in their Biological Opinion to minimize or prevent impacts of habitat removal. Converting one acre of road is further described in Irreversible and Irretrievable Commitment of Resources.
	8e) Mitigation minimizing the footprint of the road corridor, to 12' width, and reducing shoulder disturbance with appropriate engineering such as retaining walls particularly in sidehill descent and cut/fill portions. Further appropriate mitigation would be to deposit felled or uprooted trees directly into the river, or onto the slope left after the existing temporary alignment is removed.	Mitigation on page 27	Mitigation measures including leaving felled trees on the slope. The road relocation would be designed to meet safety standards. Road width of less than 14 feet would not be standards for this road (FSH 7709.56).

Respondent	Comment	Location in EA	Remark/Response
	8f) RF-2e of the NWFP riparian reserves Standards and Guidelines states: “minimize disruption of natural hydrologic flow paths, including diversion of stream flow and interception of surface and subsurface flow”. The failed road crossing of Downey Creek did not meet this standard. The approach fill on the west end of the bridge blocks roughly a hundred feet of floodplain containing visible channels, including one distributary channel which carries water at a normal flow, but at normal flows crosses under the approach fill in subsurface gravels. The proposed repair (preferred alternative) does nothing to correct this deficiency and restore the natural functioning of flood channel in the lower Downey Creek delta. Removal of the approach fill, rather than hardening it, is the proper means of correcting and complying with ACS S&Gs.	Riparian Reserves starting on page 82 and Floodplains on page 70 and Channel Dynamics on page 67 and Environmental Consequences on page 72	Additional information has been added to the EA.
	8g) The claim that the proposed repair would accommodate “at least the 100-year flood, including associated bedload and debris”. (wording from RF-4) is not backed up by any hard evidence or modeling.	Channel Dynamics starting on page 67 and Alternative C on page 76	A USGS formula is currently used to calculate culvert sizes to pass 100 year flood flows. Manning’s equation is used to help determine if a structure will pass debris and sediment, and 5 feet is generally added for major crossings. Field measurements were taken in Downey and Sulphur Creeks and used in calculating bankfull channel width. Downey and Sulphur Creek bridges have plenty of height and opening to pass the 100 year flow, but constriction occurs from piers and approach fill. Alternative C would increase the opening under the bridges.

Respondent	Comment	Location in EA	Remark/Response
	8h) Decommissioning the road for several hundred yards back from Downey Creek, would permit the removal of the approach fill blocking the Downey Creek floodplain. A lighter standard pedestrian horse bridge solution would be presumably cheaper, and would in addition remove the final 2 miles of road from the necessity for environmentally costly future roadway repair.	Decommission or Convert to Trail on page 21	Additional information has been added to the EA. Decommissioning the road or replacing the road with a trail and horse bridge does not meet the purpose and need of returning vehicle access to the area. Decommissioning the road and converting it to a trail was considered but not further analyzed in detail. The Suiattle River Road is considered a high level road that is used for many recreational and administrative uses.
	8i) The campground use statistics on p. 28 of the EA demonstrate that in the 3 years preceding the flood, the Buck Creek campground was used more than twice as much as the Sulphur Creek campground despite the similar size. Most users apparently prefer a shorter drive. Expansion of [Buck Creek] would provide jobs and expanded recreational resources, Sulphur Creek could be used as a hike-in facility. An equestrian increased trail mileage fulfills an increasing demand for low-elevation, low-gradient trail.	Project Scope on page 5 and Alternatives Eliminated from Detailed Study on page 21	Changing or expanding recreation opportunities is outside the scope of this analysis. Additional clarification has been added to the EA.

Scoping Comments

A scoping letter dated February 9, 2004, was sent to 457 groups and individuals that described the 2003 flood event and the damage and proposed repairs. A complete copy of the mailing list is in the project files. Interested or affected people were asked to submit their comments and concerns to the identified team leader for each project. For the Suiattle Road 26 Repairs, Eight groups and nine individuals responded. The following table displays the scoping comments and their disposition

Table 22: Scoping Comments

Scoping Comment	Who	Significant Issue to Evaluate Alternatives?	Within Scope?	Covered by Law, Plan?	Relevant to the Decision	Response to Comment and Where Relevant Comments are Addressed
Close road to motorized transport and convert to trail as less expensive economically & environmentally to maintain. Turn road into trail urged at Downey…	Pilchuck Audubon Society	No - close/convert road to trail.	No	Forest Plan	No	Close/convert to trail does not meet purpose or need, added to Alternatives Not Studied in Detail
… less expensive	Pilchuck Audubon Society	Yes – expense	Yes	No	Yes	Issue #2 expense
… less impact on fish habitat.	Pilchuck Audubon Society	Yes – impact fish habitat	Yes	No	Yes	Issue #4 fish habitat
Evaluate all road repair projects in one EIS to better evaluate their cumulative effects.	Pilchuck Audubon Society	No- EIS not needed No- cumulative effects	No	No	No	No significant effects so no EIS see Project Scope. Cumulative effects disclosed in Chapter 3.
MP 14.4 reroute will slice off pristine Huckleberry Mt. trail through old growth.	North Cascades Conservation Council	Yes - impact to Huckleberry Trail and old growth.	Yes	No	Yes	Issue #5 Huckleberry Trail

Scoping Comment	Who	Significant Issue to Evaluate Alternatives?	Within Scope?	Covered by Law, Plan?	Relevant to the Decision	Response to Comment and Where Relevant Comments are Addressed
At Downey Creek construct trailhead & convert last 2 miles to trail & walk in camping.	North Cascades Conservation Council	No - Need for more trail and walk in camping.	No	Forest Plan	No	Convert road to trail does not meet purpose or need, added to Alternatives Not Studied in Detail
Extend Downey Bridge for more fish friendly solution.	North Cascades Conservation Council	Yes - fish habitat at Downey Cr.	Yes	No	Yes	Issue #4 fish Added to Alternatives Not Studied in Detail
Return the upper 11 miles or so of the Suiattle Road to a trail for a more wilderness like experience and a buffer for the wilderness.	Dale Wick	No - need for more trail and wilderness like experience.	No	Forest Plan	No	Convert road to trail does not meet purpose or need, added to Alternatives Not Studied in Detail.
Protect & restore salmon habitat. .	American Rivers	Yes - salmon habitat protection and restoration.	Yes	No	Yes	Issue #4 fish
Decommission at Downey Creek & last 2 miles is more fish friendly	American Rivers	No – decommission road	No	Forest Plan	No	Decommission road does not meet purpose or need, added to Alternatives Not Studied in Detail.
Downey Creek is significant producers of Chinook & may need longer span or close road to avoid impact of placing rock in channel & poaching on fish and their habitat.	Skagit River System Cooperative	Yes - impacts to fish and habitat in Downey Cr.	Yes	No	Yes	Issue #4 Longer span in Alt. C and Alternatives Not Studied in Detail. Close road does not meet purpose or need.

Scoping Comment	Who	Significant Issue to Evaluate Alternatives?	Within Scope?	Covered by Law, Plan?	Relevant to the Decision	Response to Comment and Where Relevant Comments are Addressed
Relocate MP 14.4 away from river so no riverbank protection needed. MP 21.9 extend bridge to allow natural channel function and provide fish habitat. MP 22.9 move west abutment out of channel to return natural condition.	Dept. of Fish and Wildlife	Yes - impact on fish habitat and passage.	Yes	No	Yes	Issue #4 fish Included in Alt. C
Decision should wait until trail assessment is made. Consider do not repair options. At MP 14.4 or at 21.8, replace damaged areas w/ trails to change rec opportunities	Matthew Riggen	No – trail assessment and convert road to trail	No	Forest Plan	No	Trail information included in Chapter 3. No Action alternative included. Convert road to trail does not meet purpose or need, added to Alternatives Not Studied in Detail.
Do not reroute through precious old growth at Huckleberry Mountain.	Jim Scarborough	Yes - impact on old growth.	Yes	No	Yes	Issue #5 trail and old growth
Trailhead at Downey for primitive state for recreation.	Jim Scarborough	No – convert road to trail	No	Forest Plan	No	Convert road to trail does not meet purpose or need, added to Alternatives Not Studied in Detail.
There will be more storms & damage with constant riprap and waste of taxpayer money	Phil Leatherman	Yes – future damage and expense	Yes	No	Yes	Issue #2 expense
Convert to trail for hiking opportunity.	Phil Leatherman	No – convert road to trail	No	Forest Plan	No	Convert road to trail does not meet purpose or need, added to Alternatives Not Studied in Detail.
Relocate roads & bridges prone to flood damage while protecting river and habitat processes.	American Whitewater	Yes – impact on fish habitat and river processes.	Yes	No	Yes	Issue #4 fish

Scoping Comment	Who	Significant Issue to Evaluate Alternatives?	Within Scope?	Covered by Law, Plan?	Relevant to the Decision	Response to Comment and Where Relevant Comments are Addressed
Provide river access for rafts near Downey Creek.	American Whitewater	Yes - need for boating access to river.	Yes	No	Yes	Issue #1access
Consider boating access. Slid rafts down steep slope at Downey Creek Trailhead in past.	Washington Recreational River Runners	Yes - need for boating access to river.	Yes	No	Yes	Issue #1access
MP 14.4 move road toward hillside and place rock in riverbed toward the bank & remove bend in river. MP 21.9 excavate stream bed. MP 22.9 fill and riprap abutment to prevent additional sediment. Be cost efficient and practical.	Bob Boyd	Yes – prevent sedimentation and cost effective	Yes	No	Yes	Issue #2 expense Issue #4 fish
Restore all roads to their former state as soon as possible as we are frequent users of this area.	Michael Andreoni & Val Brown	Yes – restore road for access.	Yes	Forest Plan	Yes	Issue #1access
More vehicle congestion if cars can't reach trailhead. Makes hike to Miners Lookout 2 miles longer.	Mike & Ruth Hardy	Yes – restore vehicle access to Suiattle trailhead.	Yes	No	Yes	Issue #1access
Look at how many trails, roads, and access if closed & what impacts to what is left open. Access for tribe to berry fields is being closed on mountain ridges.	Off the Beaten Path Shari Brewer	Yes – access	Yes	No	Yes	Issue #1access

Scoping Comment	Who	Significant Issue to Evaluate Alternatives?	Within Scope?	Covered by Law, Plan?	Relevant to the Decision	Response to Comment and Where Relevant Comments are Addressed
Local small contractors can't get repair contracts. Repair quickly as tourism and recreation and local economy depend on roads & trails.	Off the Beaten Path Shari Brewer	No – local contractors and repair quickly	No	Yes	Yes	Contracting procedures and environmental process requirements are outside the scope of this decision. Effects are disclosed in Chapter 3 Socioeconomics.
Repair the road immediately to restore access.	Mike Torok	Yes – restore access	Yes	Forest Plan	Yes	Issue #1access
Cost and impacts of new trailhead and trail will be greater than repair at Downey bridge.	Mike Torok	No	Yes	No	Yes	Alternatives Not Studied in Detail.
Repair access to favorite trails & backcountry quickly. Camp- ground investments and public access decisions have been made and direct you to repair road.	Paul Wagner	Yes – repair access	Yes	Forest Plan	Yes	Issue #1access

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