

Table of Contents

Chapter 1 - Purpose and Need	1
Summary	1
Document Structure	1
Purpose and Need for Action	2
Proposed Action.....	2
Decision Framework.....	3
Project Record.....	5
Forest Plan and Other Direction	5
Wilderness Act.....	6
National Trails System Act.....	6
Public Involvement	6
Issues	7
Safety and Cost-Effectiveness of the Bridge	7
Impact on Wilderness	7
Chapter 2 - Alternatives	9
Process Used to Formulate the Alternatives	9
Alternatives Considered, but not Further Analyzed	12
Alternatives Analyzed	13
Alternative 1 - No Action.....	13
Alternative 2 - Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw	13
Alternative 3 - Repair Using Helicopter and Rock Drill.....	14
Mitigation Measures and Management Requirements.....	18
Wildlife.....	18
Wilderness	18
Fish	18
Invasive Plants.....	19
Heritage Resources	19
Comparison of Alternatives	20
Chapter 3 - Environmental Consequences	21
Wilderness	21
Alternative 1 - No Action.....	22
Alternative 2 – Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw	22
Alternative 3 – Repair Using Helicopter and Motorized Rock Drill	23
Cumulative Effects.....	24
Forest Plan Consistency	24
Trails	24
Alternative 1 - No Action.....	27
Alternative 2 – Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw	27
Alternative 3 – Repair Using Helicopter and Motorized Rock Drill	28
Cumulative Effects.....	29

Table of Contents

Forest Plan Consistency	29
Fish.....	29
Effects Common to Both Action Alternatives	30
Cumulative Effects.....	30
Forest Plan Consistency	30
Aquatic Conservation Strategy	30
Riparian Reserves	30
Key Watershed.....	31
ACS Objectives.....	31
Floodplains and Wetlands.....	33
Water Quality	33
Forest Plan Consistency	33
Wildlife	34
Threatened and Endangered Species.....	34
Northern Spotted Owl.....	34
Marbled Murrelet.....	34
Grizzly Bear.....	35
Gray Wolf.....	36
Sensitive Species.....	37
<i>Cryptomastix devia</i> (Puget Oregonian snail)	37
<i>Derocerus hesperium</i> (Evening Fieldslug).....	37
<i>Hemphillia gladulosa</i> (Warty Jumping Slug).....	38
<i>Megomphix hemphilli</i> (Oregon megomphix).....	38
Townsend’s Big-eared Bat	38
Wolverine	39
Other Rare and Uncommon Species	39
Management Indicator Species	39
Neotropical Migratory Birds.....	40
Cumulative Effects.....	40
Spotted Owl and Marbled Murrelet.....	41
Townsend’s Big-eared Bat	41
Grizzly Bear.....	41
Forest Plan Consistency	42
Botany.....	42
Forest Plan Consistency	43
Clean Air	43
Forest Plan Consistency	43
Heritage Resources.....	43
Forest Plan Consistency	43
Environmental Justice	44
Treaty Resources	45
Irreversible and Irretrievable	45
Prime Farmland and Other.....	45
<i>Agencies and Persons Consulted.....</i>	<i>46</i>

Table of Contents

Federal Agencies	46
Tribes	46
Groups and Individuals.....	46
List of Preparers	46
Appendix A – Public Comments	47
Appendix B—References Cited.....	49

List of Tables

Table 1. Alternative Comparison Table.....	20
Table 2. Affected Trails (Forest Plan Trail Inventory)	26
Table 3. Race and Ethnicity Profile	44
Table 4. Summary of 2007 Scoping Comments	47
Table 5. Summary of 2008 Scoping Comments	48

List of Figures

Figure 1. Vicinity Map.....	4
Figure 2. Skyline Bridge Before 2003 Flood.....	10
Figure 3. Skyline Bridge Site After 2003 Flood	10
Figure 4. New Bridge Site above Canyon Creek.....	11
Figure 5. Mini-excavator on Steep Side Slope.....	15
Figure 6. PCT Repair Project Map.....	17

Chapter 1 - Purpose and Need

Summary

The Mt. Baker-Snoqualmie National Forest proposes to repair the Pacific Crest National Scenic Trail (PCT) #2000 with a safe stock and hiker crossing of the Suiattle River. The proposed action is to construct a new stock bridge and 3.5 miles of trail. Major flooding in October 2003 destroyed the Skyline Bridge, which was where the PCT crossed over the Suiattle River. The project is located in the Glacier Peak Wilderness, on the Darrington Ranger District, Mt. Baker-Snoqualmie National Forest, Washington, within T31N, R14E, Sections 11, 12 and 13.

The proposed action would restore continuity along this portion of the Pacific Crest National Scenic Trail and provide trail access in this portion of the Glacier Peak Wilderness.

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

- Introduction
- Alternatives
- Environmental Consequences
- Agencies and Persons Consulted

Introduction: The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Alternatives, including the Proposed Action: This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Environmental Consequences: This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by

resource area. Within each section, the affected environment (if any) is described first, followed by the effects of the No Action Alternative that provides a baseline for analysis and comparison of the other alternatives that follow.

Agencies and Persons Consulted: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

The appendices provide detailed information to support the analyses presented in the environmental assessment. Additional documentation, including more detailed analyses of project-area resources, may be found in the Project Record located at the Darrington Ranger District Office in Darrington, Washington.

Purpose and Need for Action

The purpose of the proposed action is to restore continuity of the PCT for hikers and equestrians and provide trail access in this portion of the Glacier Peak Wilderness. The Suiattle River is one of the three largest rivers crossed by the PCT in Washington State. Only the Columbia and Stehekin Rivers are larger and both are crossed using vehicle bridges. The “Skyline” Bridge that was washed out was a 275 foot multiple span stock bridge which crossed the Suiattle River near the junction of the PCT and the Suiattle River Trail #784. The Suiattle River is considered a dangerous crossing for hikers and impassable to stock without a bridge. This section of the PCT is located in the western portion of the Glacier Peak Wilderness, within Management Area 10B (Wilderness Trailed) of the Land and Resource Management Plan for the Mt. Baker-Snoqualmie National Forest. The trail is managed per direction in the plan and in accordance with the Comprehensive Management Plan for the Pacific Crest National Scenic Trail (1982). The trail is designated as a More Difficult Pack and Saddle (stock) trail.

Measurement Criteria:

- Whether safe crossing for hikers and equestrians is provided over the Suiattle River.
- Whether PCT is restored to its designated use.

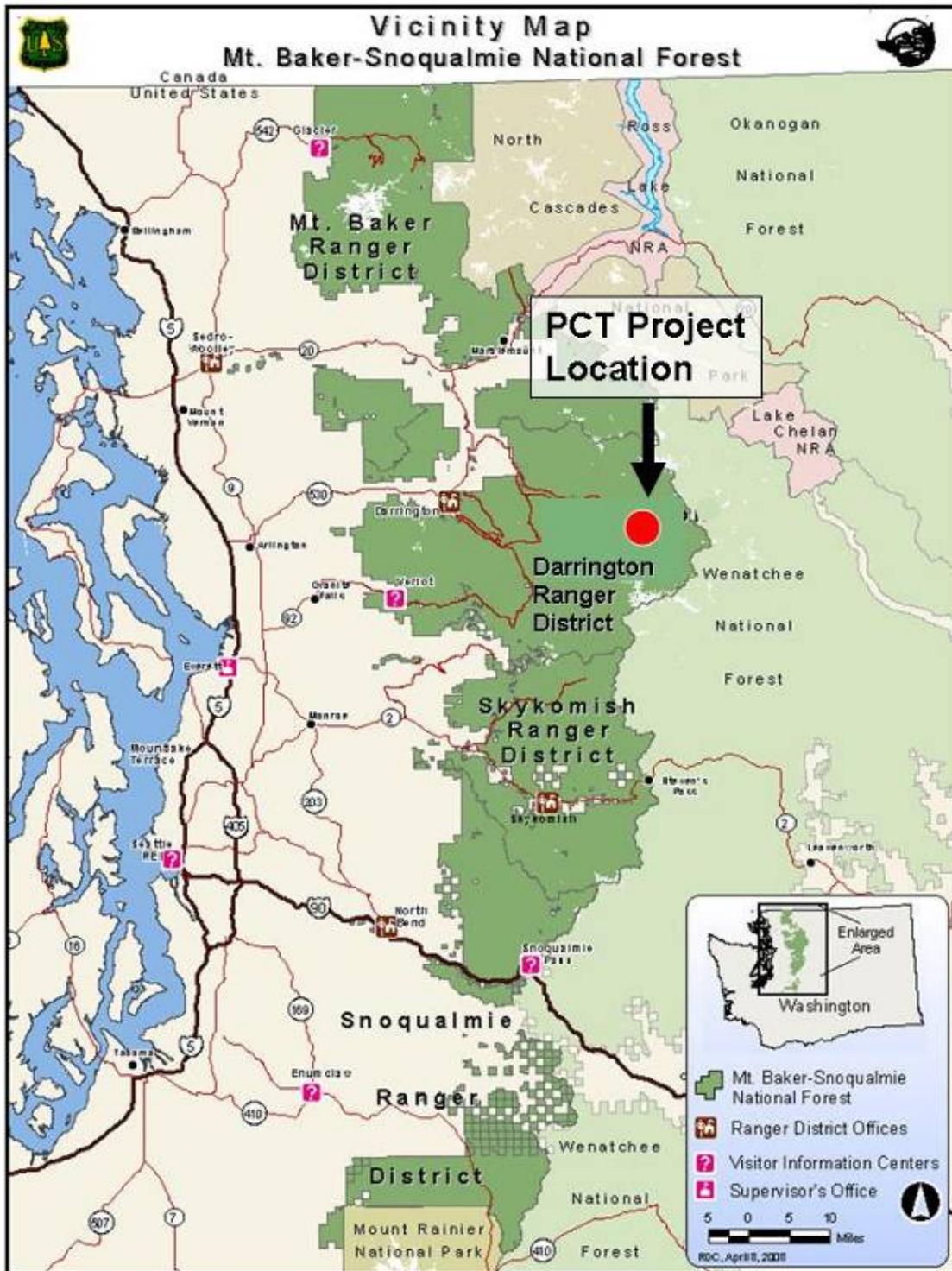
Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to construct a new bridge for stock and hikers including 3.5 miles of new trail construction using helicopter, motorized rock drill, mini-excavator, and chainsaw. The new bridge site is the location identified in the Optimal Location Review and the new trail and bridge would match design elements designated for the PCT.

Decision Framework

Given the purpose and need, the Forest Supervisor (responsible official) will decide whether to repair the PCT and, if so, by what means including any mitigation measures and monitoring to be implemented.

Figure 1. Vicinity Map



Project Record

This EA hereby incorporates by reference the Project Record (40 CFR 1502.21). The Project Record contains Specialist Reports and other technical documentation used to support the analysis and conclusions in this EA.

Relying on Specialist Reports and the Project Record helps implement the CEQ Regulations' provision that agencies should reduce NEPA paperwork (40 CFR 1500.4). The objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental impacts of the alternatives and how these impacts can be mitigated, without repeating detailed analysis and background information available elsewhere. The Project Record is available for review at the Darrington Ranger Station.

Forest Plan and Other Direction

This EA has been prepared in accordance with regulations established under the National Environmental Policy Act of 1969 (NEPA), located at 40 CFR 1500-1508. This document tiers to the Forest Plan Final Environmental Impact Statement (FEIS) for the Mt. Baker-Snoqualmie Land and Resource Management Plan, i.e. Forest Plan (USDA Forest Service 1990), as amended.

The Pacific Crest National Scenic Trail (PCT) is located within the Glacier Peak Wilderness and Management Area 10B, Trailed Wilderness. The Pacific Crest National Scenic Trail was designated through the National Trails System Act and the Forest Plan for hiker and pack and saddle use. Standards for construction and maintenance have been established for its entire length (Forest Plan pp. E-7, E-17). The proposed action would repair the trail to the designated standards (More Difficult, Pack and Saddle). The Management Area 10 Wilderness goal is to preserve and protect the wilderness character. The goal of the designated intensity of 10B Trailed is to manage the system trail to its primary objective (Pack and Saddle) and difficulty level (More Difficult).

The streams where the trail and bridges would cross are also Riparian Reserves and the Suiattle Watershed is designated as a Tier 1 Key Watershed. Watershed Analysis for the Suiattle River Watershed has been completed (July 2004). The following are the Riparian Reserve Standards and Guidelines for Recreation Management (1994 Record of Decision Standards and Guidelines pp. C-34, C-37):

- RM-1 Trails should be designed to not prevent meeting Aquatic Conservation Strategy objectives.
- RM-2 Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives.
- RM-3 Wilderness management plans will address attainment of Aquatic Conservation Strategy objectives.

Wilderness Act

The proposed action is located within the Glacier Peak Wilderness. The 1964 Wilderness Act (Section 4 {c}) specifies that use of motor vehicles, motorized equipment, mechanical transport, and structures or installation are normally prohibited, but allows them if necessary to meet minimum requirements for administration of wilderness. Use of motorized equipment is consistent with Forest Service Manual (FSM) 2326.1 – Conditions Under Which Use May be Approved, based on physical material restrictions, seasonal limitations and safety. The authority to grant waivers for motorized use within designated wilderness under conditions contained in the FSM has been delegated to the Forest Supervisors (Regional Forester memo, Pacific Northwest Region, File Code 2320, June 22, 2005).

National Trails System Act

The 1968 National Trails System Act designated the Pacific Crest National Scenic Trail (PCT) and its location through the Darrington Ranger District in the Glacier Peak Wilderness. The National Trails Act designates the PCT as a Hiker/Equestrian Trail for its entire length.

Public Involvement

The proposal has been listed in the Forest's *Quarterly Schedule of Proposed Actions* starting in 2007. Consultation with six Tribes began in January 2007, with the Stillaguamish and Sauk-Suiattle Tribes requesting to be informed of developments. The proposal was provided in a letter dated January 19, 2007 to 164 individuals, groups and other agencies for comment. Seven individuals and five groups responded supporting options for repair with one also urging use of non-motorized tools. In the spring of 2007, an alternative originally surveyed near Miners Creek was found to be no longer viable due to a massive slope failure which occurred during the November 2006 flood event. The failure took out the access to the proposed bridge site, and flood waters overtopped the proposed bridge footing on the south side and the river threatened to move entirely out of its channel.

In May 2007, a superior bridge site was located downstream about one half mile above Canyon Creek. An updated scoping letter dated February 15, 2008 was sent to 148 individuals, groups and agencies, and six Tribes. Thirty-six public responses were received with all supporting repair of the PCT. Most supported use of motorized tools to repair the trail quickly, safely, and effectively. Three responses preferred no use of motorized equipment and four suggested using only the minimum motorized tools necessary. Two responses also identified using non-toxic materials in the construction. Using the comments from the public, other agencies, and organizations, the interdisciplinary team developed a list of issues to address.

Copies of this EA will be mailed to those who have participated in the scoping process or have requested a copy and it will be posted on the Forest website. Legal notice of the availability of the EA will be published in the *Everett Herald*, initiating the 30 day pre-decisional comment period. The ID Team and the Responsible Official will consider substantive comments received (as per 36 CFR 215) and as appropriate, improve the analysis in response to those comments. Copies of the comments received and documentation of the agency's consideration of those comments are available in the Project Record.

Issues

Issues are defined as points of disagreement, debate, or dispute about the environmental effects, direct or indirect, of the proposed action. **Non-issues** are identified as those: 1) 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.

Significant issues are defined as those that are used to develop alternatives, develop mitigation measures, or track environmental effects. Refer to Appendix A for a summary of the comments received and issues identified. As for significant issues, the Forest Service used information from the project scoping and public comments and identified the following two issues:

Safety and Cost-Effectiveness of the Bridge

The location and method of bridge construction over the Suiattle River may pose risks to worker safety and prove not cost-effective in the long run.

Measurement Indicators:

- Estimated person days to clear and excavate trail.
- Risks to worker safety by number of person days for chainsaw and crosscut saw.
- Capacity of new bridge to withstand future floods.
- Difference in cost to clear and excavate trail.

Impact on Wilderness

The project and the use of motorized equipment may adversely affect wilderness character and values.

Measurement Indicators:

- Hours of helicopter use over wilderness.
- Number of person days using motorized rock drill.

- Number of person days using chainsaw.
- Amount of blasting using estimated pounds of explosives.
- Estimated person days for camping.
- Estimated crew hiking trips on Suiattle Trail
- Number of trees over 21” diameter to be removed.

Chapter 2 - Alternatives

This chapter describes and compares the alternatives considered for the PCT repair. It includes a description and map of alternatives considered. This section also presents the alternatives in comparative form, defining the differences between each alternative. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social and economic effects of implementing each alternative.

Process Used to Formulate the Alternatives

The initial assessment for repairs to the PCT began shortly after the October 2003 flood event. Alternatives were originally considered for a bridge site just downstream from the old Skyline Bridge across the Suiattle River (below the mouth of Miners Creek). This site would have included construction of a complex (cable or truss) trail bridge about 160 feet in length and one mile of new trail. In the spring of 2007, this alternative was considered no longer viable due to a massive slope failure on the south side of the river, which destroyed the best option for the trail to access to the proposed bridge site. Furthermore, the flood waters (November 2006) overtopped the proposed bridge footing sites on the south side and the river threatened to move entirely out of its current channel. A superior bridge site, possibly the best on the entire length of the Suiattle River, was identified in a narrow bedrock gorge about 1/2 mile above the mouth of Canyon Creek. This new site would allow for a bridge 70 feet long with a simple single span design without instream piers over the Suiattle River. This bridge site offers solid footings on either side and an overflow channel during times of flood to handle additional flow. The site also appears to have remained above the scour lines of the flooding in 2003 and 2006. Since the bridge site is on bedrock, the site itself will not wash away during future flood events. Additional information was derived from an "Optimal Location Review" of the PCT in this area. The Optimal Location Review looked at several different PCT relocation options in this area. This Optimal Location Review was prepared by T.E.A.M.S, a Forest Service Enterprise Unit, recommended by Forest Service staff and the Pacific Crest Trail Association, and approved by the Forest Supervisor. The Optimal Location Review recommended that the best long-term location for the PCT would be to cross the river at this new site.

The purpose and need as well as significant issues were used to help develop the proposed action and alternatives.

Figure 2. Skyline Bridge Before 2003 Flood



Figure 3. Skyline Bridge Site After 2003 Flood



Figure 4. New Bridge Site above Canyon Creek



Alternatives Considered, but not Further Analyzed

The Optimal Location Review studied several route options because the former site of the Skyline Bridge where the PCT crossed the Suiattle River was no longer usable. The October 2003 flood destroyed the bridge and altered the channel geometry.

Skyline Bridge Site. Spanning the widened river channel at the old “Skyline” Bridge site would involve construction of a massive structure in excess of 400 feet in length. Constructing such a bridge at this site would be a very visible intrusion on the wilderness and to the experience of travelers passing through the area. The bridge would be visible from several locations on the Miners Ridge Trail. The flood deposited a deep layer of unconsolidated material and the river channel has been changing constantly as material is eroding and increasing the active channel width. Constructing a bridge at this site would require felling old growth trees near the site or importing, by helicopter, the large amount of material that would be needed for construction. Due to the unconsolidated material at this site, a bridge here would be at high risk for failure in a future flood. In addition a new 60 foot bridge would need to be constructed at Vista Creek to replace the washed out one. For these reasons, this alternative was not further considered.

Downstream of Skyline Site. Constructing a new stock bridge over the Suiattle River about ¼ mile downstream from the old Skyline Bridge site was considered, but dropped from further analysis when the site was discovered, in the spring of 2007, to have suffered additional major flood damage over the winter. The site did have the advantage of a bedrock footing on the north side of the channel, giving the opportunity for a securely anchored single tower cable stay bridge. The bridge would need to be at least 160 feet in length. This site would require construction of about one mile of new trail and a new bridge over Vista Creek. A bridge at this site would also have created a large visual intrusion on the wilderness and required either a large number of trees to be felled at the site or a large amount of material to be flown in by helicopter.

Suiattle River at Milk Creek Trail. The Optimal Location Reviewed looked at designating a permanent stock alternate route to the PCT by using the existing Milk Creek and Suiattle River Trails. This route option would require construction of a major stock bridge (160 feet) over the Suiattle River on the Milk Creek Trail as the former bridge washed out in the 2003 flood. Due to the need for a major, complex bridge across the Suiattle River at this site, along with instability of the southern bank of the river and the loss of the high country experience for equestrians, this alternative was not further analyzed.

On-site Native Materials. Constructing a bridge at the new preferred site using on-site native materials was considered in the Minimum Requirement/Minimum Tool analysis. Due to the potential impact to the wilderness resource from cutting down old growth trees and moving them through the forest for about ¼ mile along with the limited life span (through decay of wood members, not flooding) such a structure may serve and safety

issues, this alternative was not further considered. (Major bridges which had previously been built across the Suiattle River were located, in part because of the presence of large diameter trees in the immediate vicinity of the crossing. Many were cut down for bridge material.) The preferred site is located in an area which is surrounded predominantly by second growth (from past forest fires) Douglas-fir of moderate diameter. As a result, trees of large enough diameter to handle expected snow load in this area are not present near the bridge site. The nearest trees of sufficient size are located about 1/4 mile away on the south side of the valley.

Stock Packed Materials. Constructing a truss or suspension type bridge at the new preferred site with the components and materials packed by stock to the site was considered. Access to the site due to damage on the Suiattle Road 26 and the Suiattle Trail make this alternative impractical within the project timeline. Experience with similar structures has shown that their maintenance is more difficult than a simple span structure. This alternative was not considered further.

Alternatives Analyzed

Alternative 1 - No Action

Under the No Action alternative, no repairs would be made to the PCT. The trail would stay in the same location, and bridges would not be built over either Vista Creek or the Suiattle River. Through access by equestrians would not be possible and hikers would face a significant hazard attempting to cross the Suiattle River on fallen logs. The PCT would not meet its intended use. Maintenance of the PCT would be minimal as access to the trail by maintenance crews would be limited due to the lack of a bridge over the Suiattle River.

Alternative 2 - Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw

The action proposed by the Forest Service to meet the purpose and need is to construct a new bridge for stock and hikers including 3.5 miles of new trail construction using helicopter, motorized rock drill, mini-excavator, and chainsaw. The new bridge site is the location identified in the Optimal Location Review, and the new trail and bridge would match design elements of adjacent sections of the PCT.

The new bridge location is about 1/2 mile above Canyon Creek on the Suiattle River and three miles below the old Skyline Bridge location. The outstanding feature of the new site is the presence of bedrock to anchor both footings for the bridge and a relatively short clear span of about 70 feet. The span could be simply supported and would not require in-channel structures. A second 40 foot-long bridge is needed to cross a bedrock overflow channel in the same area. The bridges would be built using steel I-beam stringers with

decking and railing made from Alaska yellow cedar. No treated material would be used in the bridges.

A helicopter would deliver all necessary tools, materials, and supplies to construction camps at the project site. This would include a 1,000 pound powder magazine and materials for the bridge. Construction crews would walk to the project site using the Suiattle Trail. (The Suiattle Trail is not accessible to stock animals due to washouts on Suiattle Road 26 about 12 miles downstream from the Suiattle Trailhead and damage to the Suiattle Trail.) Helicopter landings would not be authorized in the wilderness. A mini-excavator would be used to construct the trail in order to minimize the amount of explosives used. A motorized rock drill would be used to bore the holes needed for the explosives required to construct the trail bed and for the anchors for the bridge abutments (footings used elsewhere). A chainsaw would be used to clear large diameter trees from the trail route (alignment) to increase the safety margin for the construction crew.

Connecting this new bridge to the PCT would require constructing about 3 miles of new trail on the south side of the Suiattle River and ½ mile on the north side. It would tie to the existing PCT to the south before the current crossing of Vista Creek. The new trail would wind through old growth forest before traversing an open younger forest on a bench above the river. The trail would ford Dolly Creek and cross a small stream with a puncheon bridge. Deep duff layers and large diameter down material is present for about ¾ of the length of this new trail.

On the north side of the Suiattle River, new trail (about 0.5 mile) would be constructed to connect the new bridge to the existing Suiattle River Trail #784. The portion (about 3.25 miles) of the Suiattle Trail from this junction to Miners Creek would become a segment of the PCT.

The remaining one-mile segment of the PCT between Vista Creek and the junction of the Upper Suiattle Trail #798 would become an extension of the Upper Suiattle Trail #798, which is managed as a More Difficult Hiker Trail. The Vista Creek Bridge would not be replaced and the crossing would become a hiker ford. The segment of the PCT from the old junction of the Upper Suiattle Trail to the Suiattle River Trail would be abandoned.

Use of a helicopter, motorized rock drill, chainsaw and mini-excavator are considered the minimum tools needed on this project (Minimum Tool Analysis, February 2009).

Alternative 3 - Repair Using Helicopter and Rock Drill

This alternative is similar to Alternative 2 except the new trail construction would be completed without the use of a mini-excavator and chainsaw. A helicopter would be used to supply the construction camp and to fly in necessary materials for use in construction including the bridge stringers, abutments, decking and railings. A motorized rock drill would be used to bore holes in rock for explosives and trees would be removed

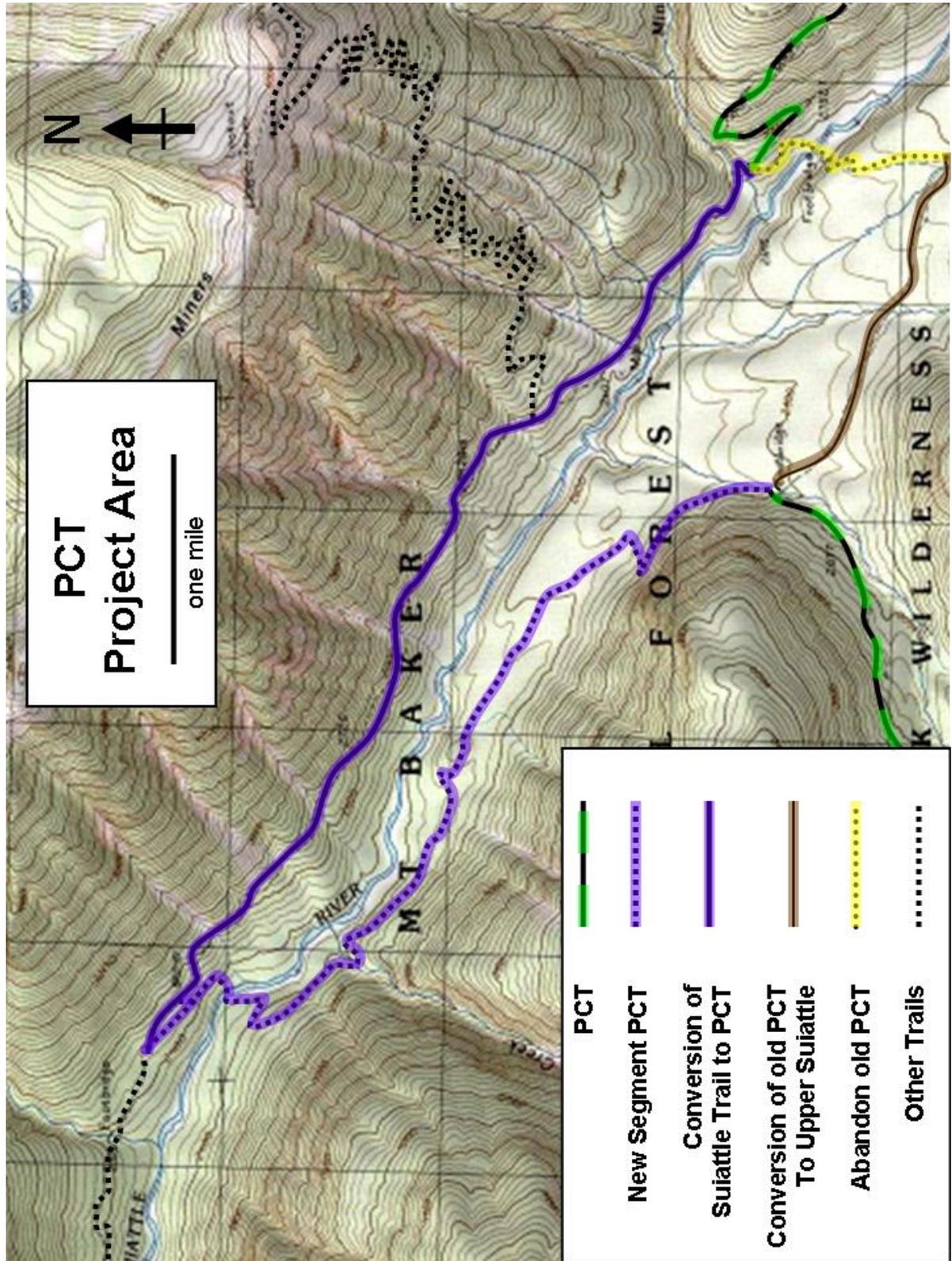
using crosscut saws and explosives. Explosives would also be used to remove rootwads and rocks during excavation. An explosives magazine would be flown to the construction site. Stringers for puncheon would be flown to the site and decking would be split out of material available on-site.

All construction equipment, tools and supplies would be delivered to the construction site using helicopter. Hand crews would do all clearing and excavation work on the 3.5 miles of new trail. The crew would access the site via the Suiattle Trail.

Figure 5. Mini-excavator on Steep Side Slope



Figure 6. PCT Repair Project Map



Mitigation Measures and Management Requirements

Mitigation measures or management requirements are designed to avoid, reduce, eliminate, rectify, or compensate for undesirable effects from proposed activities. The following measures and requirements are integral parts of Alternatives 2 and 3.

Wildlife

The use of explosives, helicopters, and motorized equipment would occur between July 15 and February 28 to minimize effects to northern spotted owl and marbled murrelets. The falling of trees larger than 21 inches diameter would occur between September 16 and February 28.

When work crews are staying overnight on the job site, unattended attractants (human food, beverages, cosmetics, toiletries, pet foods, processed livestock feed and grains, cooking residue, empty food containers, and other refuse) would be made unavailable to wildlife by either storing attractants in an IGBC certified bear resistant container or by hanging attractants 10 or more feet above the ground and 4 or more feet from the hanging structure and 100 or more feet from sleeping areas. Attractants would be considered attended when non-sleeping people are within 80 feet of the attractants. All food preparation, cooking, and cleaning areas would be 100 feet or more from sleeping areas.

Wilderness

Helicopters would not be allowed to land in wilderness or to transport personnel into the wilderness. Mini-excavator track width would be no more than 36 inches. Fuel storage would comply with standard contract clauses.

Wilderness users would be informed of this project by posting notices at the trailhead and by preparing articles for local newspapers explaining the necessity of this project.

Trail construction crews would camp in areas designated by the Forest Service and follow low impact camping techniques to minimize resource impacts. Forest Service would monitor compliance and project inspectors would access the project on foot.

Portions of the Suiattle Trail and the PCT would be closed periodically should repair work impose hazards to wilderness visitors.

Fish

The minimum safe distance by charge weight: setbacks from the "MBS Blasting Guidelines for Protection of Fish, January 31, 2007" would be adhered to. Where rock breaking closer to streams is required, for instance at bridge footings, chemical rock expansion or other rock breaking techniques would be used.

Invasive Plants

All construction equipment would be cleaned and free of weeds prior to entering the National Forest.

Heritage Resources

If a previously unidentified cultural resource is discovered during project implementation, the activity shall be stopped in the area of the find and a reasonable effort to secure and protect the resource made. The Heritage Specialist shall be notified and the Forest shall fulfill its responsibilities in accordance with the Programmatic Agreement and other applicable regulations.

Comparison of Alternatives

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

Table 1. Alternative Comparison Table

Measure	Alternative 1	Alternative 2	Alternative 3
Safe crossing provided	No	Yes	Yes
PCT restored to designated use	No	Yes	Yes
Person days to clear & excavate	0	~ 233	~ 768
Risks to worker safety by person days with saws	None	70 chainsaw	182 crosscut saw
Withstand future floods	N/A	Yes	Yes
Trail clear & excavate cost	\$0	\$116,500	\$384,000
Helicopter hours over wilderness	0	15.1	16.6
Motorized rock drilling person days	0	13	13
Chainsaw person days	0	70	0
Blasting (pounds)	0	1000	3000
Camping person days	0	307	842
Crew hiking trips on Suiattle Trail	0	31	84
Trees over 21" Removed	0	~8	~8

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 comparison of alternatives presented in the chart above.

Wilderness

The proposed action is located near the geographic center of the Glacier Peak Wilderness. At 573,000 acres, Glacier Peak is the largest National Forest wilderness in the Pacific Northwest. Combined with the adjacent Henry M. Jackson, Wild Sky, Stephen Mather (NPS) and Lake Chelan Sawtooth Wilderness, the acreage of this complex exceeds 1.1 million acres. The Glacier Peak Wilderness offers some of the most spectacular mountain terrain within the entire wilderness system. With elevations ranging from 1,100 feet at the edge of Lake Chelan to the 10,541 foot crest of Glacier Peak and a wide range of precipitation, it is also a mountain environment with tremendous diversity. The area features numerous glaciers, high mountain lakes and low elevation valleys with stands of magnificent old growth forest. The rugged mountains of this part of the North Cascades put severe limits on the ability to construct and maintain trails. As a result, with an average of about 0.74 mile of trail for every 1,000 acres of land (on the MBS portion of the wilderness), trail access to the wilderness is relatively low. Large areas without trails, particularly centered on the north and northwest portions of the wilderness, offer some of the most remote and least visited mountain areas in the northwest.

Use of a mini-excavator, chainsaw, helicopter and motorized rock drill is consistent with Forest Service Manual (FSM) 2326.1 – Conditions Under Which Use May be Approved, based on physical material restrictions, seasonal limitations, and safety. The 1964 Wilderness Act (Section 4 {c}) specifies that use of motor vehicles, motorized equipment, mechanical transport, and structures or installations are normally prohibited, but allows them if necessary to meet minimum requirements for administration of wilderness. The 1968 National Trails System Act designated the Pacific Crest National Scenic Trail as a hiker and equestrian trail for its entire length and set its current location through the Glacier Peak Wilderness. Repairing the damaged Pacific Crest National Scenic Trail is an essential activity and using mini-excavator, chainsaw, helicopter and motorized rock drill are the minimum tools necessary.

The authority to grant waivers for motorized use within designated wilderness under conditions contained in the FSM has been delegated to the Forest Supervisors (Regional Forester memo, Pacific Northwest Region, File Code 2320, June 22, 2005). As required for this decision-making authority, The Forest Supervisor completed the National Advanced Wilderness Management Training for Line Officers course.

The *Minimum Requirement/Minimum Tool Analysis*, February 2009, concluded that mini-excavator, chainsaw, helicopter and motorized rock drill are the minimum tools required to implement the project. The October 2003 flood cut off stock access to this portion of the Glacier Peak Wilderness, and the risk of injury or loss of life is high due to the hazardous river crossings and washed out sections of approach roads and trails. Use of helicopter to import materials would eliminate the need and high risk to workers of felling and skidding old growth logs and minimize the need to cut down trees in the wilderness. It is not possible to transport the bridge stringers or powder magazine to the project site by any other method than by helicopter. The high risk of injury and time (283 person days) needed to hand drill make use of motorized rock drill (13 person days) a more reasonable tool. Use of a mini-excavator would reduce the amount of blasting required on the project by about two-thirds and the amount of person days about 70%, thus substantially reducing the number of days crew are exposed to the hazard of transporting and working with explosives. Use of chainsaw would increase the margin of safety for the construction crew. Use of this equipment would result in the least overall impact to the wilderness environment and allow the PCT to regain its function as a designated National Scenic Trail.

Alternative 1 - No Action

Under the No Action Alternative, this portion of the wilderness would retain a high degree of wildness due to the lack of trail bridges and limited use by hikers. Stock use would no longer occur in this area due to the lack of a trail bridge across the Suiattle River and the 60 mile round trip that would be required to access this area. Some hikers would avoid the dangerous crossing of the Suiattle River by continuing to utilize the PCT detour through the Napeequa Valley resulting in a higher level of visitation in that area. No trees would be cut, no vegetation or soil disturbed, and the 3.5 miles of new trail and a bridge over the Suiattle River would not be built in the wilderness. There would be no use of motorized equipment, use of explosives, or construction crew camp development in the wilderness. The purposes for which the PCT was designated by Congress would not be met.

Alternative 2 – Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw

With repair of the PCT visitors, including stock users, would return to the area for the first time since 2003. As the PCT would intersect the Suiattle Trail ½ mile east of Canyon Creek instead of at Miners Creek, access to the PCT would be 3 miles closer to the Suiattle Trailhead than is presently the case. This would likely alter some of the pre-existing use patterns in the area. For example, it may cause some increase in use in the spectacular Image Lake area as this would only add about 1 mile to a trip on the PCT between the Suiattle River crossing and Suiattle Pass. Previously, it was a 7 mile side trip to reach this famous spot. The new trail would also shorten access from the Suiattle

Trailhead to the meadows north of Glacier Peak by about 2.5 miles. The use of this area returning to its popularity as a loop trip opportunity is currently in question due to lack of a bridge across the Suiattle River on the Milk Creek Trail. It is likely that new campsites may be created in the wilderness near the new bridge site and perhaps on the flats about one mile east of Dolly Creek.

The degree of potential effect of this project due to the use of motorized equipment and its effect on wilderness resources would be minor and temporary. Helicopter use over the wilderness would total about 15.1 hours spread over several months. Motorized rock drilling would occur over approximately 13 days. Chainsaw use would take place over an estimated 70 person days and the mini-excavator would operate for about 163 days. Few wilderness visitors have been present in this part of the wilderness due to the severe road and trail damage since the 2003 flood event (see *Minimum Requirement/Minimum Tool Analysis*, February 2009).

During construction of the new trail and bridge, visitors to the area may hear the sounds of trail construction. Most likely to be heard would be the use of explosives on the project. The helicopter used to haul material to supply the construction crew would also be heard from the Suiattle Trail and Miners Ridge Trail for about 15.1 hours spread over several months. It is unlikely given the dense canopy in the valley bottom and the lack of sightlines from Miners Ridge Trail that a visitor would get more than a glimpse of the helicopter flying in the area. The excavator is a very quiet machine and would not likely be heard above the background noise of the river. The chainsaw may occasionally be heard depending on how the sound is buffered by the dense forest.

Since the mini-excavator does the work with fewer people, the amount of time and number of individuals that would be necessary to complete the construction work would be minimized. This would result in a lower level of impact of the crews camping in the area. Use of the helicopter to ferry supplies to the project area would minimize encounters between the construction crew and wilderness visitors on the Suiattle Trail, as they would only be commuting to the construction site and not make numerous trips backpacking supplies along the trail. Using off-site materials for bridge construction would eliminate the need to fall trees for building trail structures, and impacts associated with moving the large logs needed through the woods would not occur (see *Minimum Requirement/Minimum Tool Analysis* for details). Only eight trees over 21 inches diameter are estimated to be removed for the trail construction.

Alternative 3 – Repair Using Helicopter and Motorized Rock Drill

This alternative would have the same net result as Alternative 2, except no mini-excavator or chainsaw would be used. Trees and downed logs would be removed using crosscut saws and explosives. The number of crew people days needed to complete the trail excavation and clearing (768) would be over 3 times greater than in Alternative 2

(233). The extended crew presence and/or possible larger crew size, would create more vegetation loss and soil compaction in and around the construction crew camps (535 more person days). The additional crew personnel using the Suiattle Trail would increase other visitors' chances of encounters with them over several construction seasons. If a crew person makes the trip every 10 days of work, there would be an estimated 84 trips with Alternative 3 and 31 trips with Alternative 2.

The use of explosives on the project would be roughly triple, as the crew would need to blast stumps and rocks out of the ground instead of digging them out with the mini-excavator. Use of the helicopter would be greater at 16.6 hour under this alternative as the crew would need to be supplied with food, camp gear, tools and equipment for more person days and more explosives would need to be transported. More crew and days to complete the project would increase the number of trial encounters in this part of the wilderness during the construction period.

Cumulative Effects

Projects which may overlap in space and time within this portion of the Glacier Peak Wilderness are the Upper White Chuck Trail relocation completed in 2003, the lower Suiattle Trail reconstruction, the upper White Chuck PCT Trail reconstruction (completed 2008), Milk Creek Crossing of the PCT (expected to finish in 2009). Impacts to wilderness from motorized equipment are minor and temporary. The Milk Creek Crossing of the PCT is expected to be complete before the PCT Repair at the Suiattle River Crossing begins so there would not be any contribution to cumulative effects on wilderness.

As discussed in the Trails section below, major flooding in 2003 and 2006 has dramatically decreased visitation to the western half of the wilderness. With completion of this project, use along the PCT is expected to increase, but until access roads in the Suiattle and White Chuck drainages are repaired, use is expected to remain lower than pre-flood levels.

Forest Plan Consistency

All alternatives would be consistent with the standards and guidelines for wilderness management in the Forest Plan, as amended.

Trails

The Pacific Crest Trail and the Appalachian Trail were the original two trails designated as *Scenic Trails* under the National Trails System Act of 1968. The PCT ties together the Skyline Trail in Oregon, the Cascade Crest Trail in Washington, the John Muir Trail in the Sierra of California, and other trails into one trail, approximately 2,650 miles in length between the Mexican and Canadian borders. The portion of the PCT referred to in this document, travels through the western portion of the Glacier Peak Wilderness.

The National Trails System Act designates the PCT as a Hiker/Equestrian Trail for its entire length. The trail is managed according to the Act and the *Comprehensive Management Plan for the Pacific Crest National Scenic Trail* (1982). The section of trail where this project is located is managed as a *More Difficult* Pack and Saddle (or stock) trail per direction in the *Land and Resource Management Plan for the Mt. Baker-Snoqualmie National Forest* (1990). The trail falls within Management Allocation 10B Wilderness – General Traveled. While bridges are not prescribed by the Forest Plan, the lack of bridges at this major river crossing essentially makes the rest of the trail unusable to a majority of users.

Because of the damage from the flood event, this portion of the PCT no longer meets its design criteria or the minimum requirements for the trail. Stock cannot access the PCT by any route, and hiking is limited and potentially dangerous because of the hazards posed by damage to the trail and the Vista Creek and Suiattle River crossings. Those using the trails are mostly those who are through, or segment, hikers of the PCT. Use of the trail for shorter trips has declined tremendously as only those who have the motivation to traverse this area to achieve the goal of hiking the entire (or segment) of the PCT are using the trail. In past years when road access was possible to the Suiattle and White Chuck Trailheads and bridge crossings were in place, the greatest use of this section of the PCT came from hikers and equestrians who were doing relatively short trips into the high country around Glacier Peak. Using the North Fork Sauk, White Chuck, Milk Creek, and Suiattle River roads and trails as access points different loop and one way trips were possible with the PCT as the backbone of that connected these trails. Even with the repairs made to the PCT it is unknown when, or if, all of the trails and roads mentioned above will be repaired.

In 2004, a detour of the PCT was established far to the east, in the Wenatchee River Ranger District. The detour will remain in effect until repairs are made to the PCT on the west side of Glacier Peak.

Several trails are affected by this project to the extent that their use would be restored to approximately where it was prior to the 2003 flood event by completion of this project. Eventual repair of the Suiattle Road would have additional affects. The Suiattle trailhead provides access to the most interconnected trail system on the Forest. Connections to the Buck Creek Pass, Railroad Creek, Agnes Creek, and Pacific Crest Trail allow users to travel, on foot or horseback, to the Wenatchee National Forest (Trinity, Holden Village) and the North Cascades National Park (Stehekin). The PCT provides access south towards Stevens Pass and north to the National Park and Canada. The Miners Ridge Trail accesses the Image Lake area, known as one of the scenic icons of the Wilderness Preservation System. The Glacier Peak Wilderness makes up 70 percent of the entire Suiattle Watershed. Primary wilderness use is on trails including the PCT. Five commercial guides operate under permit, providing backpacking trips.

The following table lists trails that are accessed from the Suiattle Trailhead and affected by this project.

Table 2. Affected Trails (Forest Plan Trail Inventory)

Trail Number	Trail Name	Primary Objective	Difficulty Level	Use Level	Miles
784	Suiattle River	Stock	Easiest	Heavy	10.8
785	Miner's Ridge	Stock	Easiest	Heavy	9.9
785.1	Image Lake hiker	Hiker	Easiest	Heavy	.6
785.2	Backpacker Camp	Hiker	Easiest	Heavy	.1
985.3	Miner's Ridge Lookout	Stock	Easiest	Medium	.1
986	Dusty Ridge	Hiker	More Difficult	Low	3.5
987	Sheep Camp	Stock	More Difficult	Low	1.0
788	Grassy Point	Stock	More Difficult	Medium	3.5
789	Buck Creek Pass	Stock	More Difficult	Medium	5.0
790	Milk Creek Trail	Stock	More Difficult	Heavy	6.5
791	Gamma Way	Stock	More Difficult	Low	6.0
792	Triad Creek	Hiker	More Difficult	Low	4.7
795	Miner's Cabin	Stock	Easiest	Medium	2.1
797	Canyon Lake	Hiker	Difficult	Low	7.0
798.1	Upper Suiattle River	Hiker	More Difficult	Low	3.0
799	Flower Dome	Stock	More Difficult	Low	1.0
2000.01 – 2000.05	Pacific Crest National Scenic Trail (Suiattle Pass To Fire Creek Pass)	Stock	More Difficult	Heavy	26.9
1513	Buck Creek Pass	Stock	More Difficult	Heavy	9.6
1256	Railroad Creek	Stock	More Difficult	Heavy	11.0
1279	Suiattle Pass	Hiker	Most Difficut	Medium	1.0
1239	Agnes Creek	Stock	More Difficult	Medium	5.0

The October 2003 flood washed away portions of the Suiattle River Trail and many trail bridges on the PCT and the Milk Creek Trail. Ongoing repairs to flood damage on the Suiattle Trail are underway. 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 routes are currently inaccessible or have much longer approach routes.

Based on trailhead registration (with 83% compliance factor), use levels on the Suiattle Trail prior to the flood event averaged about 1,650 visitors per year during the 5 years prior to the 2003 flood event. Many of these users also used a portion of the PCT during their backcountry travels. Other PCT users come south into the area from High Bridge in North Cascades National Park or Holden Village or Trinity, and by coming north through the wilderness from points as far south as Mexico. While the exact number of these transient users is difficult to gauge, wilderness rangers' estimates are that about another 1,500 people use the PCT through this area. There are also no estimates of PCT trail use since the flood event, though it is known that many PCT through-hikers have taken the risky approach of relying on finding a log to cross over the Suiattle River near Miners Creek. No equestrian parties have made the through trip since 2003.

The public was notified of the major flood damage and inaccessibility of the many road, trails, and recreation sites, surrounding the Glacier Peak Wilderness. Use has declined dramatically in the area since the 2003 flood as observed by Forest Service staff (few cars at road closures and few hikers seen by volunteers working on Miners Ridge). Some hikers have parked their vehicles at the current end of the Suiattle Road (MP 12), walked or ridden bicycles 8 miles up the road, climbed a make-shift ladder onto the Downey Creek bridge, and continued on 2.5 miles to the Suiattle Trailhead. This option has not been available to stock users because stock cannot get past the washout at Downey Creek.

Alternative 1 - No Action

With no action, the PCT would not have a bridge over the Suiattle River. The Suiattle is the largest and most dangerous river crossing on the PCT between the Columbia River and Canada. The PCT would not meet its designated intent as a border to border hiker and equestrian trail. The temporary detour route through the east side of the Glacier Peak Wilderness and the Wenatchee National Forest would remain in place indefinitely. Access to the remainder of the PCT on the Darrington Ranger District would continue to be difficult, and long-term helicopter access to conduct maintenance on the trail would likely be considered.

Alternative 2 – Repair Using Helicopter, Motorized Rock Drill, Mini-excavator, and Chainsaw

This alternative would restore the PCT to its pre-flood condition by constructing a 70-foot long bridge over the Suiattle River and a shorter span across an overflow channel and constructing 3.5 miles of new trail. Motorized equipment would be used to facilitate the repairs. Imported materials would include:

- Sill material (including concrete), decking, handrails and bull rails for bridges
- Steel stringers for stock bridges
- 6"x 8" stringers for puncheon
- Explosives and explosives magazine

- Construction equipment including hardware, tools and camp supplies
- Mini-excavator

These materials and supplies would be flown by helicopter from the current end of the Suiattle Road at MP 12 to the construction sites. Down western red cedar for puncheon decking is available on site, and hand tools would be used to split the decking. Crews would travel by foot, bicycle, helicopter, or other approved method to the Suiattle Trailhead and hike to and from the construction site. A crossing over the Suiattle River would be constructed first so crews would have improved access to the 3.0 miles of trail construction on the south side of the river.

Visitation of Miner's Ridge and Image Lake may increase, as the new PCT location would make the area an easier side trip destination. The distance as a side trip from the PCT between the Suiattle River and Suiattle Pass would decrease from 7 miles to 1 mile. Increased use of the Miners Ridge Trail by both hikers and stock users may be problematic until heavy maintenance on the trail can be completed.

Alternative 3 – Repair Using Helicopter and Motorized Rock Drill

The outcome would be the same as Alternative 2, except it would take longer to accomplish and pose additional risk to the construction crew. The PCT would be inaccessible to stock users and hikers, and safety issues associated with the Suiattle River crossing would exist for a longer period. Costs would be much higher due to excavation and clearing costs. To facilitate trail clearing and excavation, about three times the amount of explosives would need to be used to remove logs, stumps, rocks, and debris from the trail and three times the person days. Crew members would be at higher level of risk using cross cut saws on the many tricky binds on large diameter material and over many more days (182) when compared to Alternative 2 at 70 person days using a chainsaw.

Construction time for completion of trail clearing and excavation without the use of a chainsaw or a mini excavator is estimated at 768 person days. Clearing and excavation with a mini-excavator and chainsaw is estimated at 233 person days, or a difference of 535 days or 70% less. This would mean additional seasons to complete the project and/or much larger crews.

Trail clearing and excavation labor costs without a chainsaw or mini excavator equipment are estimated at \$384,000. The estimated clearing and excavation costs with the use of chainsaw and mini-excavator are estimated at \$116,500. This means an additional \$267,500 would be needed to complete just this portion of the project without motorized equipment. While cost is usually not a criterion for use of motorized equipment in wilderness, it is generally a consideration in implementing any trail project or expenditure of government funds.

Cumulative Effects

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. Many main roads are inaccessible for dispersed recreation and vehicle access to trailheads. The Darrington Ranger District has a total of 367 miles of trail. About half of those trail miles have been negatively affected due to lack of road and trail access due to storm damage since October 2003.

Impacts to the District and Forest trail programs occur in that other trail projects could not be implemented due to the time commitment to this project. Resource protection issues as well as safety issues drive many trail reconstruction or construction projects. The more efficiently this section of the PCT is repaired, the sooner the next flood repair project can proceed and the mounting backlog maintenance and subsequent resource and safety issues addressed.

Trail projects which may overlap in space and time within this portion of the Glacier Peak Wilderness are the Upper White Chuck Trail relocation completed in 2003, the lower Suiattle Trail reconstruction, the upper White Chuck PCT Trail reconstruction (completed 2008), and Milk Creek Crossing of the PCT (expected to finish in 2009). The Milk Creek Crossing of the PCT is expected to be complete before the PCT Repair at the Suiattle River Crossing begins so there would not be any cumulative effects contributions between these projects for trails.

Forest Plan Consistency

Alternative 1 would not be consistent with the standards and guidelines for trails in the Forest Plan, as amended. Alternatives 2 and 3 would be consistent with the standards and guidelines for trails in the Forest Plan, as amended.

Fish

Section 7(a)(2) of the Endangered Species Act of 1973 (as amended) requires all federal agencies to review actions authorized, funded, or carried out by them to ensure that 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 Oceanic and Atmospheric Administration (NOAA) through a Programmatic Agreement if projects could potentially affect listed species. Bull trout (threatened) and its critical habitat are the only listed fish species that could be potentially affected by the proposed action. The project area is located in the upper Suiattle River watershed on the Darrington Ranger District on the Mt. Baker-Snoqualmie National Forest.

Effects Common to Both Action Alternatives

Because the project is located four miles upstream of an anadromous fish barrier there would be no effect to salmon or steelhead or their habitat. However, a resident population of bull trout occurs upstream of this barrier. The most recent review of the best science available by the Forest Service, USFWS, and NMFS (MBSNF Level 1 meeting January 31, 2007) has led to guidelines (Appendix B) that establish minimum setback distances for a given charge weight for blasting near streams. The project is designed around these guidelines and uses chemical rock expansion or other rock breaking techniques where explosives might adversely affect fish. A small amount of sediment may fall into the Suiattle River or Vista Creek from trail construction or bridge construction activities, but since these streams are very turbid from glacial outwash during the periods when construction would be occurring, this amount would be immeasurable and insignificant. Therefore, this project would not adversely affect bull trout and would have no effect on any other species of fish or fish habitat.

Cumulative Effects

Because this project would have no direct or indirect effects on fish, and there are no other projects proposed for this area that could affect this resident population of bull trout, there would be no contribution to cumulative effects on fish..

No Essential Fish Habitat as described under the Magnuson-Stevens Fishery Conservation and Management Act would be affected by the proposed action.

Forest Plan Consistency

The project was designed to avoid effects to fish and fish habitat while meeting other resource needs. Therefore, all alternatives would be consistent with the standards and guidelines of the Forest Plan, as amended, related to fisheries and aquatic resources.

In Alternatives 2 and 3, the project described in this analysis would meet fisheries standards and guidelines of the Forest Plan, as amended.

Aquatic Conservation Strategy

The Aquatic Conservation Strategy (ACS) is a primary component of the Forest Plan, as amended (USDA Forest Service 1994) for the protection of aquatic and riparian-dependent species. There are four components of the ACS: Riparian Reserves, Key Watersheds, Watershed Analysis, and Watershed Restoration.

Riparian Reserves

The proposed bridge is located within riparian reserves and the proposed trail crosses several riparian reserves. The Record of Decision (USDA Forest Service 1994) 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 Reserve Standards and Guidelines for Recreation (ROD pg. C-34) that are applicable to this proposed action include the following:

- RM-1 Trails should be designed to not prevent meeting Aquatic Conservation Strategy objectives.
- RM-2 Relocate facilities to adjust dispersed or developed recreation that retard or prevent attainment of Aquatic Conservation Strategy objectives.

The bridges across the Suiattle River and other streams would be designed to span the channel and avoid instream piers. Minimal impact would occur across riparian areas with the trail tread.

Key Watershed

The project is located in the Suiattle River Tier 1 Key Watershed, and the Suiattle River watershed analysis was completed in 2004 (USDA Forest Service 2004).

Watershed restoration has proceeded in several locations in the Suiattle River watershed. Restoration includes road reconstruction and drainage upgrades, decommissioning, noxious weed treatments, and instream treatments and off-channel aquatic habitat creation or enhancement.

ACS Objectives

In addition to the four components of the ACS, there are nine objectives that collectively assure the processes that Riparian Reserves are intended to protect function appropriately. Project consistency determinations under the requirements of the National Forest Management Act include a determination of consistency with these nine objectives as described in the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA Forest Service, USDI Bureau of Land Management 1994) page B-10. In addition, the district court ruled in *Pacific Coast Fed. of Fisherman's Assn. et al v. Natl. Marine Fisheries Service, et al. and American Forest Resource Council, Civ. No. 04-1299 RSM* (W.D. Wash) (*PCFFA IV*) that project consistency reviews must include the project or site scale and the watershed scale. The following is an assessment of the PCT Repair against the nine ACS Objectives.

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

The PCT Repair project is located in the Glacier Peak Wilderness where watershed and aquatic systems would be maintained. The trail bridges would span over the river to

avoid instream impacts, and the project is too small of an activity to adversely affect watershed scale features.

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

Conditions would be maintained. The trail bridges would span the river and would not obstruct the network connectivity.

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

The trail bridges would span the river and maintain the physical integrity. Compared to the original bridge with multiple instream piers in the bankfull streambed, the proposed bridge location and design is an improvement.

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

Conditions would be maintained. The amount of fine sediment that could potentially enter streams from this project is very small and due to the naturally high turbidity in Vista Creek and the Suiattle River, this amount of fine sediment would be indistinguishable from background conditions. No effects to stream temperature would occur. Mitigation measures restrict the storage and usage of fuels and other toxic chemicals to avoid contamination of water.

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

The sediment regime would be maintained: see Objective 4.

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

Conditions would be maintained. The amount of ground disturbance is too small to have a measurable effect on water yields or timing of runoff.

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

Conditions would be maintained. The PCT Repair project would not change floodplain inundation or wetlands or meadows.

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

The composition and structural diversity of plant communities in riparian areas would be maintained as only a small narrow band of vegetation would be removed for the trail tread.

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

Habitat would be maintained as only a small amount of vegetation would be removed for the trail.

Floodplains and Wetlands

Executive Orders 11988 and 11990 (1977) direct federal agencies to avoid to the extent possible adverse impacts associated with the occupancy and modification of floodplains and floodplain development and avoid to the extent possible, adverse impacts associated with the destruction or modification of wetlands. There are no wetlands adjacent to the bridge or trail locations and stream crossings would be designed to withstand flood events.

Water Quality

The Clean Water Act of 1977 and subsequent amendments make it unlawful for any person to discharge pollutants into water unless a permitted. Washington State periodically prepares a list of all surface waters impaired by pollutants. No impaired water bodies are listed for this area on the 2008 Washington Department of Ecology 303 (d) lists or the 2002-2004 consolidated water quality assessment. The project would not input sediment or pollutants into water.

Forest Plan Consistency

In Alternatives 2 and 3, the project described in this analysis would meet hydrologic standards and guidelines of the Forest Plan, as amended.

Wildlife

The environmental consequences of Alternatives 2 and 3 are similar for habitat modification. The differences between these alternatives are the tools used and the amount and duration of disturbance.

Threatened and Endangered Species

There would be no effect to Canada lynx with any of the alternatives because neither they, nor their habitat, occur in the area.

None of the proposed project activities would occur in critical habitat for federally listed species, so there would be no effect to critical habitat for any species.

Northern Spotted Owl

Spotted owl habitat occurs along the entire section of new trail construction. The use of explosives, helicopters and motorized equipment would not occur during the early spotted owl nesting season. Alternative 3 anticipates a threefold increase in the use of explosives and person days, but no use of chainsaw or mini-excavator.

Because spotted owl nestlings fledge prior to July 15, noise disturbance resulting from blasting and helicopter, and/or trail construction during the post-fledging period could result in owls flushing from their daytime roosts. Flushing from day roosts is not expected to adversely affect northern spotted owl. The likelihood of flushing occurring because of these activities is low because these activities would occur in a very small proportion of an owl home range, which for this portion of its range averages 4,270 acres. If an owl did move because of a loud noise or people constructing a trail, flush distances are usually less than 60 meters (Delaney et al. 1999). Movements of this distance are not expected to affect survival rates due to a negative energy balance, nor are short flights expected to increase owl susceptibility to predation because potential predators, such as barred owl, are expected to be impacted by the same sources of disturbance.

With both Alternatives 2 and 3, trail construction would fell up to 8 trees that may be potentially suitable for nesting. Because tree felling would occur after owls have fledged, no direct mortality would occur. However, felling potential nest trees could reduce future habitat suitability and could adversely affect the species through reduced productivity in one or more nesting seasons.

Alternative 1 is expected to have no effect on spotted owls because all potential nesting habitat would remain intact and there would be no change in owl behavior if they are present in the area.

Marbled Murrelet

Most marbled murrelet nesting occurs within 30 miles of salt water. It is unlikely that marbled murrelet occur in the area because of the long distance (>50 miles) of the

proposed project area to salt water. The nearest known marbled murrelet detection is 11 miles west (towards salt water). The nearest marbled murrelet detection in the Suiattle River watershed is 16 miles to the west. As a result, it is unlikely that the species is present despite the presence of forest conditions that are suitable for marbled murrelet nesting.

Trail construction under Alternatives 2 and 3 would fell up to 8 trees that may be potentially suitable for nesting. Because tree felling would occur after murrelets have fledged, no direct mortality would occur. However, felling trees could reduce habitat suitability and could adversely affect the species through reduced productivity in one or more nesting seasons.

Alternative 1 is expected to have no effect on marbled murrelet because there would be no potential to disturb adults feeding chicks in the unlikely event that a nest were present and this alternative would retain all potential nesting habitat for the species.

Grizzly Bear

The project site is within the Suiattle Bear Management Unit (BMU) of the North Cascades Grizzly Bear Recovery Area. Grizzly bears may occupy this BMU. A confirmed grizzly bear sighting occurred in the BMU in 1997. Geographic Information System (GIS) information for open roads, high use trails, Bear Management Units (BMU), and early and late core areas (> 1/3 mile from open roads or high-use trails), which are preferred seasonal bear habitats were included in the analysis. Preferred seasonal bear habitats were identified by the North Cascades Recovery Area Technical Team and are believed to be areas of high forage value for bears.

Analyses were conducted for early and late seasons. Early season represents habitats that are usually snow-free from 3/1 to 7/15. For early season, snow-free habitat was assumed to include all forest vegetation zones. The parkland and alpine potential vegetation zones are usually covered in snow throughout most of the early season and are assumed unavailable as foraging habitat during this season. Late season represents habitats that are usually snow-free from 7/15 to October, which includes all vegetation zones.

Preferred early season foraging habitats included deciduous forest, riparian forest, shrub dominated habitats, and mid elevation areas with limited tree canopy (including meadows). Preferred late season foraging habitats included alpine and parkland areas, low-elevation forest openings, shrub dominated areas, and mid-elevation areas with limited tree canopy (including meadows).

With all alternatives, habitat use in core area is believed to be unaffected by disturbance from people. Reduced habitat use is expected in areas that are not core area. Alternative 1 would retain early and late season core areas at 92.1 and 74.7% of the Suiattle BMU, respectively. These levels of core area provide for recovery of grizzly bear.

With both Alternatives 2 and 3, early season core area would be reduced by 188 ha. Early season core area in the BMU would decrease by 0.4% to 91.7%. One hectare of high-quality foraging habitat that is currently in core area would no longer be in core area and would be of lower habitat suitability. However, because this is an isolated patch of foraging habitat that is surrounded by dense forest and is far from other preferred foraging habitats, it is of low value to grizzly bears. Because core area would remain higher than 70%, the area would remain capable of providing habitat for grizzly bear recovery. The loss of core area would not adversely affect grizzly bear.

Late season core area would be reduced by 107 hectares to 74.5% for the entire BMU. The same hectare of high-quality foraging habitat that is currently in core area would no longer be in core area and be of lower habitat suitability. Because core area would remain higher than 70%, the area would remain capable of providing habitat for grizzly bear recovery. The loss of core area would not adversely affect grizzly bear. The North Cascades Recovery Area Technical Team has approved the loss of core area that would occur with Alternatives 2 and 3.

The construction of new trail and the use of explosives that would occur with Alternatives 2 and 3 have the potential to disrupt habitat use patterns. Because habitat free from disturbance is abundant in the BMU, and habitat quality is low in the trail construction area, the potential change in habitat use is not expected to adversely affect resident grizzly bears.

Employing the mitigation measure requiring storage of bear attractants for crews camping in the area reduces the possibility of grizzly bear mortality resulting from animals becoming habituated to human food sources. The project is not expected to result in food conditioning of grizzly bears.

The PCT detour, established following the 2003 flood, routes hikers through the Indian Creek, White River, Boulder Creek, Napeequa River, and Buck Creek drainages on the Wenatchee River Ranger District. The Napeequa, in particular, is one of the wildest valleys in the Glacier Peak Wilderness. Sending PCT hikers on the rough trail through this valley has caused a substantial increase in use levels, affecting security habitat for grizzly bear and gray wolf. Completing the PCT repairs as soon as possible would allow use in the Napeequa valley to drop to pre-flood levels, providing a greater security buffer for these species.

Gray Wolf

Dispersing gray wolves may occasionally be present in the area, but they are precluded from becoming resident animals by a lack of sufficient prey availability. Successful wolf dispersal is less likely in areas with high road densities and human residences.

Opportunities for successful wolf dispersal in areas where project activities are proposed are abundant. None of the alternatives would affect factors influencing successful wolf dispersal. As a result, all alternatives are expected to have no effect on gray wolf.

Sensitive Species

Terrestrial wildlife species on the Regional Forester's Sensitive Species list for the Mt. Baker-Snoqualmie National Forest, and not currently federally listed or proposed under the Endangered Species Act, are: bald eagle, *Cryptomastix devia*, *Derocerus hesperium*, *Hemphilia glandulosa*, *Megomphix hemphilli*, *Pristiloma wascoense*, Johnson's hairstreak butterfly, Larch Mountain salamander, VanDyke's salamander, common loon, peregrine falcon, Townsend's big-eared bat, great gray owl, common loon, and wolverine. Habitat for peregrine falcon (cliff nesting area with nearby sufficient prey base), bald eagle (nearby lake or river with abundant fish during the nesting season), common loon (large, low elevation lakes), Oregon spotted frog (low elevation wetlands), Johnson's hairstreak butterfly (forests < 1,500' elevation), *Pristiloma wascoense* (habitat limited to east of the Cascade Mountains), and Larch Mountain and VanDyke's salamanders (range south of highway 2) is not present near the proposed projects.

All alternatives would have no impact on peregrine falcon, great gray owl, common loon, bald eagle, Johnson's hairstreak butterfly, *Pristiloma wascoense*, and Larch Mountain and VanDyke's salamanders because there is no suitable habitat in the project area.

***Cryptomastix devia* (Puget Oregonian snail)**

There are currently 178 locations of this species documented in the ISSSP database. They nearly all are from the Cowlitz Valley Ranger District on the Gifford Pinchot National Forest (Cowlitz and Cispus River watersheds), where the species is relatively common in stands containing big leaf maple trees below approximately 2500 feet in elevation. Outside of this area, the species is rare, with one location on the Wenatchee National Forest (possibly misidentified), one on the Olympic National Forest, three on the Salem BLM District, one in the Columbia Gorge National Scenic Area, and two on the Eugene BLM District (not verified). There are no historic records from the Mount Baker-Snoqualmie National Forest.

Surveys for this species have occurred throughout the Forest since 1994 with no detections in this 14-year time span. Based on the best available scientific information, the project area is outside of the range of this species. Because the species is not expected to occur in the project area, all alternatives are expected to have no impact on this species.

***Derocerus hesperium* (Evening Fieldslug)**

The conservation assessment for this species indicates that its known occupied range is from Hood River to the Klamath River basin, Oregon. Despite more than 10 years of surveying, the species has not been detected in Washington State. There is no reason to suspect the species to occur on the Mount Baker-Snoqualmie National Forest. Because the species is not expected to occur in the project area, all alternatives are expected to have no impact on this species.

***Hemphillia gladulosa* (Warty Jumping Slug)**

Information on the ISSSP website indicates that this species has been verified at 197 sites in Washington State on the Olympic Peninsula (Clallam, Jefferson, Grays Harbor and Mason Counties). The web site identifies five locations, one on the southern Washington coast in Pacific County, two on the Olympic Peninsula and two in the Olympia area. The web site also reports this species occurring in the South Fork Snoqualmie Watershed in King County west of the Mount Baker-Snoqualmie National Forest.

Despite more than 10 years of surveying, the species has not been detected north of King County. There is no reason to suspect the species to occur north of King County. Because the species is not expected to occur in the project area, all alternatives are expected to have no impact on this species.

***Megomphix hemphilli* (Oregon megomphix)**

The following information on this species is from “Management Recommendations for *Megomphix hemphilli*, V 2.0”. For Washington State there are 12 records for this species, based on 45 specimens, that provide seven mapable locations, which are all at low elevations (below 150 m or 500 ft) in the southwestern part of the state. Six of these locations are in the Puget Trough from Olympia south to the Columbia River, plus one location at Oakville in a side valley on the west side of the Puget Trough. Most of these records are old (based on specimens collected 30 to 120 years ago).

Despite more than 10 years of surveying, the species has not been detected on the Mount Baker-Snoqualmie National Forest. Based on the best scientific information available, the species is not expected to occur in the project area. As a result, all alternatives are expected to have no impact on this species.

Townsend’s Big-eared Bat

Townsend’s big-eared bat may occur in the Suiattle River watershed. They are most likely to occur at lower elevations. Townsend’s big-eared bats roost primarily in caves and buildings. The species has been found on Mt. Baker, Darrington, and Skykomish Ranger districts, and may be present in the analysis area. Because no alteration of caves or buildings would occur, roosting habitat would not be impacted. Potential foraging habitat would be affected in a 10’ wide linear swath with Alternatives 2 and 3. These changes are not expected to affect prey density (primarily moths). Because the species forages in a wide variety of habitats, the slight change to foraging habitat is not expected to change its suitability. Implementation of Alternatives 2 and 3 may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Alternative 1 would have no impact on this species because foraging habitat would not be impacted.

Wolverine

Wolverine may be present in the analysis area. They are generally found in remote areas with little human activity. The vegetation change with all alternatives would not affect habitat of potential prey species, which are believed to be primarily mountain goat and marmots west of the Cascade Mountains. Because potential prey species would be unaffected by the proposed trail construction, habitat quality for wolverine would be the same with all alternatives. Because wolverine may be present, individuals could be impacted by noise resulting from project activities. Alternatives 2 and 3 could result in wolverine shifting habitat use. However, because there is an abundance of habitat for wolverine in the Glacier Peak Wilderness, there is little potential prey in the project area, and wolverines have very large home ranges, small changes in habitat use resulting from trail construction are not expected to have negative impacts on wolverine survival or reproduction. Temporarily avoiding small areas of potential low-quality habitat for a few months in one year is not expected to adversely impact wolverine. Alternatives 2 and 3 may impact individuals due to small changes in habitat use, but are not expected to contribute to a trend towards federal listing or cause a loss of viability to the population or species. Alternative 1 would not impact wolverine because no helicopters, explosives, or trail construction crews would be used, and habitat use would be unchanged.

Other Rare and Uncommon Species

Two survey and manage terrestrial animal species of concern, both mollusks, have been identified for the Mount Baker-Snoqualmie National Forest. Both were described above under Sensitive Species. The range of one, *Hemphillia glandulosa*, extends only as far north as King County. The known range of *Cryptomastix devia* does not extend into the project vicinity. This species occurs in areas below 2,500' elevation. Because the project area is greater than 2,500' elevation, there is no habitat for this species in the vicinity of the project.

Because there is no suitable habitat for this species that could be affected by proposed activities, no pre-disturbance surveys were conducted, and there would be no impact to this species or its habitat.

Management Indicator Species

Management indicator species (MIS) not previously discussed includes woodpeckers (including pileated woodpecker), pine marten, and mountain goat. All MIS, except mountain goat, may occur in the area.

Mountain goats are not present in the areas proposed for project activities. As a result, all alternatives would have no impact on mountain goat, or mountain goat habitat.

Pine marten may occur in the proposed project area. The removal of a few trees, shrubs, and ground vegetation along a narrow corridor as would occur with Alternatives 2 and 3

will not alter habitat quality for pine marten. A trend of increasing habitat quality for pine marten is expected to occur with the implementation of the Northwest Forest Plan. In the Glacier Peak Wilderness, the slight modification to pine marten habitat that would occur with Alternatives 2 and 3 would not impact pine marten population trends. Alternative 1 is expected to have no impact on pine marten populations because habitat suitability would not be impacted.

Some impacts would occur to woodpecker habitat. Occasional trees would be felled for portions of trail relocations with Alternatives 2 and 3. The removal of several potential nesting and/or foraging trees over several thousand acres of wilderness will not change habitat suitability for woodpeckers or affect population trends of woodpeckers. On a larger scale, a trend of increasing habitat quality for woodpeckers is expected to occur with the implementation of the Northwest Forest Plan. Alternative 1 is expected to have no impact on woodpecker populations because habitat would not be impacted.

Neotropical Migratory Birds

The project is located within the west-side coniferous forest province. Overall, Neotropical migratory bird's species have stable populations in this geographic area.

The habitat changes proposed with Alternatives 2 and 3 would remove some trees, some shrubs, and ground cover from the territory of nesting birds. Because these alterations would occur in a narrow corridor current habitat suitability for all Neotropical migratory bird species is not expected to be of sufficient magnitude to affect survival or reproductive rates. As a result, Alternatives 2 and 3 would have no detectable impact on Neotropical migratory birds.

Alternative 1 would have no impact to Neotropical birds because there would be no change to habitat.

Cumulative Effects

Due to a lack of direct or indirect effects, there would be no contribution to cumulative effects relating to bald eagle, Canada lynx, gray wolf, peregrine falcon, great gray owl, common loon, Oregon spotted frog, Larch Mountain and VanDyke's salamanders, Townsend's big-eared bat, *Cryptomax devia*, *Deroceros hesperium*, *Hemphilia glandulosa*, *Megomphix hemphilli*, *Pristiloma wascoense*, Johnson's hairstreak butterfly, pine marten, and Neotropical migratory birds.

Project effects to wildlife species are limited to the loss of 8 potential nest trees, loss of grizzly bear core habitat, slight change to foraging habitat suitability for Townsend's big-eared bat, and potential disturbance of wolverine, grizzly bear, marbled murrelet, and northern spotted owl with Alternatives 2 and 3.

To assess cumulative effects that may add to project effects, the portion of the Glacier Peak Wilderness in the Suiattle and White Chuck watersheds, from Sulphur Mountain to White Chuck Cinder Cone was used as the analysis area for spotted owl, marbled murrelet, and wolverine. Because all of these species potentially affected by proposed activities have large home ranges, this size analysis area was needed to assess cumulative effects. The cumulative effects analysis area for grizzly bear is the Suiattle BMU, which has been established for the purpose of evaluating cumulative effects to grizzly bear.

Projects which may overlap in space and time are the Upper White Chuck Trail relocation completed in 2003, the lower Suiattle Trail reconstruction, the upper White Chuck PCT Trail reconstruction (completed 2008), and Milk Creek Crossing of the PCT (expected to finish in 2009). Because animal disturbance effects during construction would occur with Alternatives 2 and 3, on-going recreation use is also considered.

Spotted Owl and Marbled Murrelet

Because spotted owls habituate to disturbance (Delaney et al. 1999), existing high-use hiking trails are not expected to result in spotted owls flushing. The only other activity potentially disturbing spotted owls that would be concurrent with the implementation of Alternatives 2 and 3 is the repair of the Milk Creek crossing of the Pacific Crest Trail. This project will occur at an elevation too high to be suitable habitat for marbled murrelet and northern spotted owl.

As a result, there would be no other activities that add cumulatively to flushing spotted owls and marbled murrelets, or that would reduce the number of potential nest trees, that may occur with Alternatives 2 and 3. Effects will be limited to those described in direct and indirect effects.

Townsend's Big-eared Bat

All projects except the Lower Suiattle trail repair are at elevations too high to be suitable habitat for this species. The Lower Suiattle trail repair also resulted in very slight changes to foraging habitat that were not expected to change habitat suitability or affect survival and/or reproduction rates of individual animals. Effects of the combined projects would be limited to those described in direct and indirect effects.

Grizzly Bear

The lower Suiattle Trail and upper White Chuck PCT trail reconstructions resulted in no change in core area. The Upper White Chuck Trail relocation resulted in a slight increase in late season core area. The loss of late season core that would occur with Alternatives 2 and 3 would be partially offset by the slight increase of late season core that occurred with the Upper White Chuck reconstruction. Cumulatively these projects would result in a loss of approximately 100 hectares of late season core area in the BMU. Because the other trail projects did not change early season core area, cumulative impacts are limited to late season core area.

The overall slight reduction in late season core habitat is unlikely to have any effect on maintenance or recovery of grizzly bears. Core area goals of at least 55% and 68% are used in the Cabinet-Yaak and North Continental Divide recovery areas, respectively. In these areas, grizzly bear populations have increased with lower amounts of core area than would occur in the Suiattle BMU if Alternatives 2 or 3 are implemented. Populations in the North Cascades recovery area have not increased in the 40 years since the last known grizzly bear mortality. It appears that habitat quality is not limiting the North Cascades population and that population recovery will not occur without population augmentation. As a result, the cumulative increase in late season core area would likely have no impact on grizzly bear occupancy, habitat quality, or population recovery.

Trail construction with Alternatives 2 and 3 could result in grizzly bear and wolverine modifying habitat use to avoid noisy areas. High-use hiking trails would also affect habitat use patterns of these two animals during the year when the project is proposed to occur. The only other activity that would be concurrent with the implementation of Alternatives 2 and 3 is the Milk Creek Crossing of the Pacific Crest Trail. This additional source of disturbance would occur in areas where habitat quality for these two species is already reduced by high levels of human presence. As a result, they would not add cumulatively to the potential reduction in habitat quality between the Suiattle River and Gamma Creek. Because more than 75% of the wilderness will retain high quality habitat for these two species, sufficient high-quality habitat will be present to meet the habitat needs of grizzly bear and wolverine.

Forest Plan Consistency

The project was designed to avoid effects to wildlife while meeting project goals. Therefore, all alternatives would be consistent with the standards and guidelines of the Forest Plan, as amended, related to wildlife resources.

Botany

Botanical surveys of the 3.0 miles of trail location south of the Suiattle River were conducted on September 10, 2007 by a Forest Service botanist. Surveys of the 0.5 mile north of the River were conducted August 23, 2008 by a contractor. Both were intuitive controlled surveys where all species found in the project areas were recorded. The vegetation varied considerably and included hardwood forest, old-growth conifer forest, wet meadows, and second growth conifer forest.

The Sensitive lichen, *Nephroma bellum* was documented along the proposed trail route on the south side of the Suiattle River about 0.5 miles east of Dolly Creek. It was found in abundance in a vine maple patch within an alder stand and occurred on many of the maple stems. The proposed trail would be built through this vine maple patch. The trail route is restricted to this location due to rock outcrops on one side of the route and a drop-off on the other. No noxious weeds were recorded during either survey effort.

Alternatives 2 and 3 may impact individuals of *Nephroma bellum* but are not likely to cause a trend to federal listing or loss of viability because after trail construction some of the occupied vine maple patch will remain. There is abundant vine maple within the watershed, and *Nephroma bellum* is also recorded from 11 other locations on the north half of the Forest, most of those in wilderness areas.

Alternative 1 would not impact individuals because no trail construction would occur.

Forest Plan Consistency

All Alternatives would be consistent with the Forest Plan, as amended.

In Alternatives 2 and 3, the project described in this analysis would meet botany standards and guidelines of the Forest Plan, as amended.

Clean Air

Under this Act, areas of the country were designated as Class I, II, or III air sheds for Prevention of Significant Deterioration purposes. The project is located within wilderness, which is designated as Class 1 areas for air quality protection. The proposed action does not include burning or other activities that would degrade visibility or air quality.

Forest Plan Consistency

All alternatives would be consistent with the standards and guidelines for air quality in the Forest Plan, as amended.

Heritage Resources

The National Historic Preservation Act Section 106 requires 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 of project determinations. The Area of Potential Effect for the proposed project was determined pursuant to the Programmatic Agreement Regarding Cultural Resources Management on National Forests in the State of Washington. Surveyed locations and intensity were determined in accordance with the Forest's Cultural Resource Inventory Strategy (Hearne and Hollenbeck, 1996). An inventory of the trail through the project area has been completed. No historic properties were located. None of the alternatives would affect historic properties.

Forest Plan Consistency

All Alternatives would be consistent with standards and guidelines for heritage resources in the Forest Plan, as amended.

Environmental Justice

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 Darrington area (Census Tract 537) were examined to determine the presence of minority, low income, or Tribal populations in the area of potential effect. The race and ethnic profile of the local census tract from the 2000 Census is presented in the following table.

Table 3. 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% 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%). The Sauk-Suiattle Tribal lands are in Census Tract 537 as reflected in the larger percentage of Native Americans here.

There would be no disproportionately high or adverse effects to women, low income or minority populations.

Treaty Resources

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 National Forest System lands) are present is not fully known. The rights of Tribal members to access National Forest System lands and exercise Treaty rights are unchanged with any alternative. The Forest Service fulfills its general trust responsibilities through management of natural resources and continued consultation with tribal governments. The Tribal Councils were consulted, and no concerns were identified.

Irreversible and Irretrievable

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 some of the metal bridge parts.

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. This proposed action is within designated wilderness where timber productivity is not an issue. Visual and audible impacts to wilderness users during construction would be an irretrievable loss of solitude.

Prime Farmland and Other

There is no prime farmland or rangeland within the project area. Noise, climate, minerals, energy, fire, insects, and disease were considered, but are not described here because they are associated with limited or no impacts.

There are no known conflicts between the alternatives discussed in this document and the plans and policies of other jurisdictions such as town, county, state or Tribe.

Agencies and Persons Consulted

The Forest Service consulted the following agencies and persons during the development of this environmental assessment:

Federal Agencies

National Oceanic and Atmospheric Administration, National Marine Fisheries Service
US Fish and Wildlife Service

Tribes

Samish Tribe
Sauk-Suiattle Tribal Council
Stillaguamish Board of Directors
Swinomish Tribal Community
Tulalip Board of Directors
Upper Skagit Tribal Council

Groups and Individuals

Pacific Crest Trail Association
Liz LaPorta, TE.M. Enterprise Team
Beth Boyst, Forest Service Pacific Crest Trail Manager (R-5)
TEAMS Enterprise Team

List of Preparers

Gary Paull, Forest Wilderness and Trails Program Manager
Carol Gladsjo, Recreation Program Manager
Dawn Erickson, Trails Specialist and Interdisciplinary Team Leader
Jan Hollenbeck, Forest Heritage Specialist
Don Gay, Wildlife Biologist
Scott Lentz, Fisheries Biologist
Ann Risvold, Botanist
Curtis Spalding, Forest Environmental Coordinator

Appendix A – Public Comments

A scoping letter dated January 19, 2007, was sent to 164 individuals, groups, and other agencies for comment. Seven individuals and five groups responded supporting options for repair with one also urging use of non-motorized tools. An updated scoping letter dated February 15, 2008, was sent to 148 individuals, groups, and agencies. The following tables summarize the comments received. The letters and emails are in the Project Record located at the Darrington Ranger Station.

Table 4. Summary of 2007 Scoping Comments

Commentor	Comment Summary
Sauk-Suiattle Tribe	Areas of ancestors' territory, keep informed
Stillaguamish Tribe	No cultural concerns, keep informed
Traildusters Backcountry Horsemen, Richard & Louise Guthrie	Replace stock bridge is preferable, for both stock and hiker use as it intent of this trail, more scenic also, safer for hikers, Milk Creek trail has more blowdown to block trail annually. Consider portable bridges at sites frequently washed out. Keep as close as possible to Pacific Crest.
Backcountry Horsemen, Bob Gish & Jeff Chapman	Prefer to replace bridges for both stock and hikers.
Jeff & Patricia Mallory	Replace with stock bridge near current alignment.
Dick Bingham	Prefer to keep PCT in the high county and close to original route for scenic views. Instead of footlogs, consider suspended trolley
Thomas Wittmann	Replace with stock bridge near current alignment.
Cathy Nelson & Mark Winterhalter	Replace with stock bridge near current alignment, not separate trails with more repairs and maintenance needed.
David Schuurman	Replace with stock bridge near current alignment, as quick repair is better than long term impacts of heavy use on Milk Cr Trail.
George Winters	Replace with stock bridge near current alignment as footlog would not last, Milk and Suiattle Trails are difficult stock trails.
Phil Leatherman	Prefer hiker footlog or using other trails as creating another Skyline Bridge is hard to justify in such a changeable area.
National Outdoor Leadership School, Mark Langston	Prefer to replace with stock bridge near current alignment so accessible to stock and keeps in more remote and scenic area, helicopter use is appropriate as impact on users would be minimal.
Pacific Crest Trail Association, Mike Dawson	Prefer separate trails for stock and hikers as it most closely mirrors existing route and recreation values, current high route is dangerous for equestrian users, continuity of access needed, 160 foot multiple span stock bridge over Suiattle would not meet natural and scenic character along PCT. Higher hiker footlog route is safe and sustainable and lower route is safe and sustainable for equestrian users.
North Cascades Conservation Council, Marc Bardsley	Use of helicopters and other motorized equipment is not compatible with the Wilderness Act. Prefer combination of using existing trails for least amount of new construction and bridge building. Use as much non-motorized labor as possible and one contract for a skilled packer to assist with this project in order to retain primitive skills.

Table 5. Summary of 2008 Scoping Comments

Commentor	Comment Summary
Wilderness Society, Washington Wilderness Coalition, Sierra Club, Conservation Northwest, Washington Trails Association	PCNST Suiattle crossing is a high priority and consistent with the Wilderness Act, use minimum motorized tools, abandoned trail should be rehabilitated. Allow review of Minimum Tool Analysis before final action is released.
Marc Bardsley, North Cascades Conservation Council	Impact to old growth and wildlife from tree removal, minimize motorized tools, use of treated timbers
Bill Worf, Wilderness Watch	No motorized tools should be allowed as it will ensure maximum loss of wilderness character around bridge.
Bill Lider	Helicopters should not be allowed and non-toxic materials should be used.
Tom Hammond	No motorized tools should be allowed.
Mike Dawson, Pacific Crest Trail Association (PCTA)	Replace bridge with use of power tools. Unconvinced that non-handheld motorized equipment is needed for the trail construction.
Peggy Willis	Replace bridge, but helicopter should only be used if only method possible and impacts less than nonmotorized method.
Dennis & Diane Boyd	Replace bridges.
Dale & Elaine Wick	Replace bridge with use of power tools to withstand floods.
David & Jennifer LeBlanc, BCHW	Replace bridge with use of power tools for worker safety.
Bruce Wick, Icicle Outfitters & Guides	Replace bridge with use of power tools to withstand floods.
Sally Laib, BCHW	Replace bridge with use of power tools for less time.
Tom Windsor, BCHW	Replace bridge with use of power tools to restore safe use.
Colin Abercrombie	Replace bridge with use of power tools in safe and timely manner.
Jeanne Koester, NE Chapter BCHW	Replace bridge with use of power tools for worker safety.
Tom Morse	Replace bridge.
Maranne35	Replace bridge with use of power tools faster.
Marianne & Fred Honeycutt	Replace bridge with use of power tools much quicker.
Shari Brewer	Replace bridge with use of power tools more efficiently and safer.
High Rider	Replace bridge with use of power tools.
Marikay Cumpston	Replace bridge with use of power tools quicker.
Dorothy Kehres, BCHW	Replace bridge with use of power tools for safe open trails.
Robert Brooke, BCHW	Replace bridge with use of power tools in timely, safe and efficient manner.
Gene & Mary Sutliff, BCHW	Replace bridge with use of power tools for safe use.
Janet Azevedo	Replace bridge with use of power tools for worker safety.
Jack Gillette, BCHW	Replace bridge with use of power tools safer and quicker.
Sondra Johnston, BCHW	Replace bridge with use of power tools for speedy repair.
Clint Calhoun, BCHW	Replace bridge with use of power tools for worker safety.
Linda Karman	Replace bridge with use of power tools to restore quicker.
Richard Guthrie, BCHW Traildusters	Replace bridge with use of power tools for most safety, least impact and cost.
Walt Bailey	Replace bridge with use of power tools as quicker and cheaper.
Steve Babbitt	Replace bridge with use of power tools to restore quicker.
Karen Amaral, BCHW	Replace bridge with use of power tools.
Sheila Blakely, BCHW	Replace bridge with use of power tools.
Bridget Wisniewski	Replace bridge with use of power tools as quicker and cheaper.

Appendix B—References Cited

- Delaney et al. 1999. Effects of helicopter noise on Mexican spotted owls. *J. Wildlife Management* 63(1) pp. 60-76.
- Hearne, C.T.; Hollenbeck, J.L. 1996. Cultural resource inventory strategy, Mountlake Terrace, WA: Mt. Baker-Snoqualmie National Forest.
- USDA Forest Service. 1990. FEIS land and resource management plan. Seattle, WA: Mt. Baker-Snoqualmie National Forest.
- USDA Forest Service. 1990. Mt. Baker-Snoqualmie National Forest land and resource management plan. Seattle, WA: Mt. Baker-Snoqualmie National Forest.
- USDA Forest Service. 2004. Suiattle River Watershed Analysis. Darrington, WA: Darrington Ranger District. Mt. Baker-Snoqualmie National Forest.
- USDA Forest Service. 1997. Programmatic Agreement with the Advisory Council on Historic Preservation and the Washington State Historic Preservation Office pursuant to section 800.13 of the regulations (36 CFR 800) implementing Section 106 of National Historic Preservation Act.
- USDA Forest Service. 1998. USDA Forest Service strategy for noxious weeds and nonnative invasive plants. Washington, DC: USDA Forest Service.