United States Department of Agriculture
Forest Service

Stimson Access Project Environmental Assessment

Priest Lake Ranger District
Idaho Panhandle National Forests

February 28, 2001

Stimson Access Project Environmental Assessment

Summary

Introduction

The Stimson Access Project is a request from a timber company to access their private property through National Forest System lands. The application for access was submitted pursuant to the Alaska National Interest Lands Conservation Act (ANILCA). The Stimson Lumber Company land is currently surrounded by National Forest System lands and no other roaded access exists. The project area for this proposal is located on National Forest System lands in Sections 8 and 4 of T36N, R45E, Willamette Meridian in the state of Washington. The Stimson Lumber Company land to be accessed is located in Section 5 (see EA Chapter I, Figure 1).

Purpose and Need for Action

The purpose of the proposed action is to provide Stimson Lumber Company reasonable access to their land in Section 5. The need for the proposal derives from the requirement in ANILCA that the Forest Service grant landowners access to their lands when those lands are located within the National Forest boundary, when no other reasonable access exists, and the uses of the land planned by the landowner are determined to constitute "reasonable use and enjoyment."

Issues

Issues are concerns raised about the effect of a proposed action on the forest resources or the human environment that depend on the ecosystem where the proposal is to occur. For this analysis the following issues generated by the public, agencies, organizations, and the Forest Service were determined to be of sufficient concern to drive the development of alternatives, or were considered important for their value in analyzing effects.

Issue: **Effects To Grizzly Bear, Lynx, And Their Habitat -** Grizzly bear and lynx are both designated as Threatened Species and there are concerns that the proposed activities could potentially affect these species and their habitat. The project area is located within the Kalispell Granite Grizzly Bear Management Unit (BMU). The Kalispell-Granite BMU totals 85,640 acres and is one of nine designated grizzly bear management units in the Selkirk Recovery Area. Grizzly bear habitat security in this BMU is achieved through road restrictions on 27 road systems. Within this BMU, habitat effectiveness is currently maintained at 78.5 percent during the spring season (March 15 - June 30), at 72.4 percent during the summer season (July 1 - September 10), and at 78.5 percent during the fall season (September 11- November 15). The project area is located entirely within the Sema Lynx Analysis Unit (LAU). The Sema LAU is 25,239 acres in size and includes a mixture of foraging, denning, and currently unsuitable habitats. Open and total road densities within this LAU are relatively low and pose a low risk of mortality for lynx. The issue indicators measured for these issues include: 1) acres of core and security grizzly bear habitat affected and 2) acres of suitable lynx habitat affected.

Issue: **Effects To Aquatic Resources and Bull Trout -** The Bull Trout is currently listed as a threatened species. There are concerns that road construction could affect sediment delivery and/or channel characteristics, negatively impacting water quality and fish habitat. The proposed actions are located in the western-most headwaters of the Sema Creek drainage. The entire Sema watershed includes just over 7,000 acres. Sema Creek is a tributary to the South Fork of Granite Creek, which ultimately joins the mainstem of Granite Creek, one of the larger tributaries to Lower Priest Lake. Based on preliminary field reviews in 1997, Sema Creek meets water quality standards for the State of Washington. Bull trout are native to most of the streams in the watershed. Although bull trout were likely historically present in the cumulative effects area they have not been documented this high up in the Granite Creek drainages. Adult bull trout were last reported in Sema Meadows (South Fork of Granite) in 1993, which suggests some spawning may be taking place. The issue indicators measured for these issues include: 1) quantity of sediment delivered to stream; 2) changes to channel morphology; 3) amount of riparian vegetation removed; 4) risk of sediment delivery from roads at stream crossings; and 5) number of culverts in fish-bearing streams.

Effects To The Roadless Resource - The proposed activity would occur within a portion of the South Fork Mountain Roadless Area. The proposed action could affect the roadless character of this area. The project area occurs within the South Fork Mountain Inventoried Roadless Area. The South Fork Mountain Roadless Area is somewhat circular-shaped area and is largely mountainous timberland, with elevations ranging from 3,200 feet at Sema Meadows to 4,600 feet on the divide between the Pend Oreille drainage and the Priest River drainage. The inventoried acres are approximately 5,410 on National Forest System lands and 1,120 on private lands for a total of 6,530 acres. The issue indicators measured for this issue include: 1) changes to natural integrity, apparent naturalness, remoteness, solitude, and special features and 2) acreage with roadless character within the South Fork Mountain I.R.A and the entire Roadless Area Complex.

Effects To Threatened, Endangered, and Sensitive (TES) and Rare Plants – There are concerns that proposed road construction could affect population viability of TES plants. Much of the project area is characterized by dense second-growth mixed conifer forest, with scattered pockets of older fire-scarred trees. No potential habitat for the Threatened species water howellia or Ute ladies'-tresses or the proposed Threatened Spalding's catchfly occurs in the project area. Of sensitive species and Forest species of concern, no suitable habitat for aquatic, deciduous riparian, peatland, dry forest, subalpine or cold forest guild species is present in the project area. Both proposed easements cross two drainages with well-developed riparian zones, but no sensitive plants are in areas of potential impact. The issue indicators measured for these issues include: 1) presence of populations and 2) acres of suitable habitat affected.

Effects To Noxious Weed Invasion and Spread - There are concerns that proposed road construction and use could spread existing weed infestations and/or cause the introduction of new weed invaders. Noxious and undesirable weeds are currently infesting several sites adjacent to the project area. Spotted knapweed, meadow hawkweed, goatweed, Canada thistle and oxeye daisy occur along Forest Road 308 on National Forest and privately owned lands. Infestations on National Forest lands adjacent to the project area have been managed for the last three years, using an Integrated Pest Management approach that includes hand-pulling and chemical treatments. Continued monitoring and management of weeds are planned, based on district

priorities and availability of funding**.** The issue indicators measured for this issue include: 1) presence and extent of known weed infestations and 2) acres of habitat susceptible to weed invasion.

Effects on Soil Productivity – There are concerns that road construction would affect soil productivity. Soils in the proposed easements are currently in a natural state (i.e. they are undisturbed because no management activities have occurred there). In their natural state, some soils are more productive than others, due to parent material, topography, and soil texture. The issue indicator measured is the amount of soil on National Forest lands taken out of production.

Effects on Recreation Opportunities – There are concerns that construction of a new road, although closed to motorized use, could alter the recreational use patterns or experience in the project area. The area surrounding the project area receives a moderate amount of dispersed recreation activities, including huckleberry and mushroom picking, hunting, and scenic drives while Road 308 acts as the main route to destination areas such as Petit Lake and the trailhead to Kalispell Rock. The only trail maintained for recreation purposes near the area is the Kalispell Rock Trail 370. Snowmobiling also occurs to the south of the project area, along the 308 road, although the road is not part of the groomed trail system and snowmobilers are not encouraged to use this area as it is a moose wintering range. Most recreation occurs along the road corridors. The issue indicator measured for this issue includes: Change in Recreation Opportunity Spectrum classification.

Alternatives

Three alternatives were developed in detail to address the key issues. These alternatives include Alternative A, the "no action" alternative; Alternative B, the proposed action, which is to grant the easement as requested; and Alternative C, an alternative route. Additional alternatives that were developed but not considered in detail included: 1) location of the proposed access route in other locations; 2) helicopter logging; 3) land exchange with Stimson; 4) purchase of Stimson land; and 5) condemnation of the Stimson land. These alternatives were dropped from detailed consideration for reasons stated in the EA (Chapter II, Alternatives Considered but Eliminated).

Alternative A - No Action: This alternative would deny Stimson Lumber Company access across National Forest lands at this time. This alternative is required by The National Environmental Policy Act (NEPA) to be considered, and provides the basis for which to compare effects of action alternatives. It does not meet the access requirements of ANILCA for reasons described in Chapter I.

Alternative B - Proposed Action: This alternative would grant Stimson Lumber Company an easement about 4,000 feet (0.75 mile) in length by 66 feet in width on National Forest in Section 8. This access would allow Stimson to construct a road that would be an extension of an already existing road on Stimson property in Section 9. Timber removal within the right-of-way would be removed by Stimson for road construction and decked, then appraised and sold by the Forest Service. This alternative meets the purpose and need for access required by ANILCA and the IPNF Forest Plan by granting the access as requested by Stimson Lumber Company.

Alternative C – Alternate Route: This alternative would grant Stimson Lumber Company an easement about 2,500 feet (0.47 mile) in length by 66 feet in width. This easement would consist of two segments on National Forest, a short portion in Section 4 and a longer segment in Section 8. This access would allow Stimson Lumber Company to construct a road that would be an extension of an existing road on Stimson property in Section 9. This alternative would also require an additional 0.28 miles of road construction on Stimson property in Section 9. Timber removal within the right-of-way would be removed by Stimson for road construction and decked, then appraised and sold by the Forest Service. This alternative meets the purpose and need for access required by ANILCA and the IPNF Forest Plan by granting the access as requested by Stimson Lumber Company.

Environment Effects

A summary of the environmental effects for the alternatives considered in detail is presented in Chapter II of the EA under the section Comparison of Alternatives.

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CHAPTER I - Purpose And Need

Introduction

The Stimson Access Project is a request from a timber company to access their private property through National Forest System lands. As a result, the Idaho Panhandle National Forest proposes to provide access to 640 acres of land owned by Stimson Lumber Company. The Stimson Lumber Company land is currently surrounded by National Forest System lands and no other roaded access exists. Access would be provided by granting authority to Stimson Lumber Company to construct and use a low standard road across National Forest System lands. The project area for this proposal is located on National Forest System lands in Sections 8 and 4 of T36N, R45E, Willamette Meridian in the state of Washington. The Stimson Lumber Company land to be accessed is located in Section 5 (see figure 1).

Purpose And Need

Access to Section 5 was originally requested in 1992, when the land was owned by Plum Creek Timber Company. Stimson Lumber Company purchased the land in 1996 and continued pursuing access. The application was submitted pursuant to the Alaska National Interest Lands Conservation Act (ANILCA). This act directs the Forest Service to grant landowners access to their lands when those lands are located within the National Forest boundary, when no other reasonable access exists, and the uses of the land planned by the landowner are determined to constitute "reasonable use and enjoyment."

Federal regulations require the Forest Service to review the intended use of the lands to be accessed and determine if the proposed use constitutes "reasonable use and enjoyment." The Forest Service has completed this review and has made a determination that the proposed use is reasonable. The basis of this review is presented below.

Federal regulations also require additional determinations and requirements related to granting access to assure that the action minimizes adverse effects to public resources. These requirements serve to narrow the scope of the proposed action and, therefore, constitute a portion of the purpose and need. Required determinations related to the proposed action are described below.

In consideration of the statutory and regulatory requirements described above, the primary purpose of this proposal is to meet the Agency's responsibility to provide access to the non-Federal land, and to do so in a manner that minimizes adverse effects on public lands and resources.

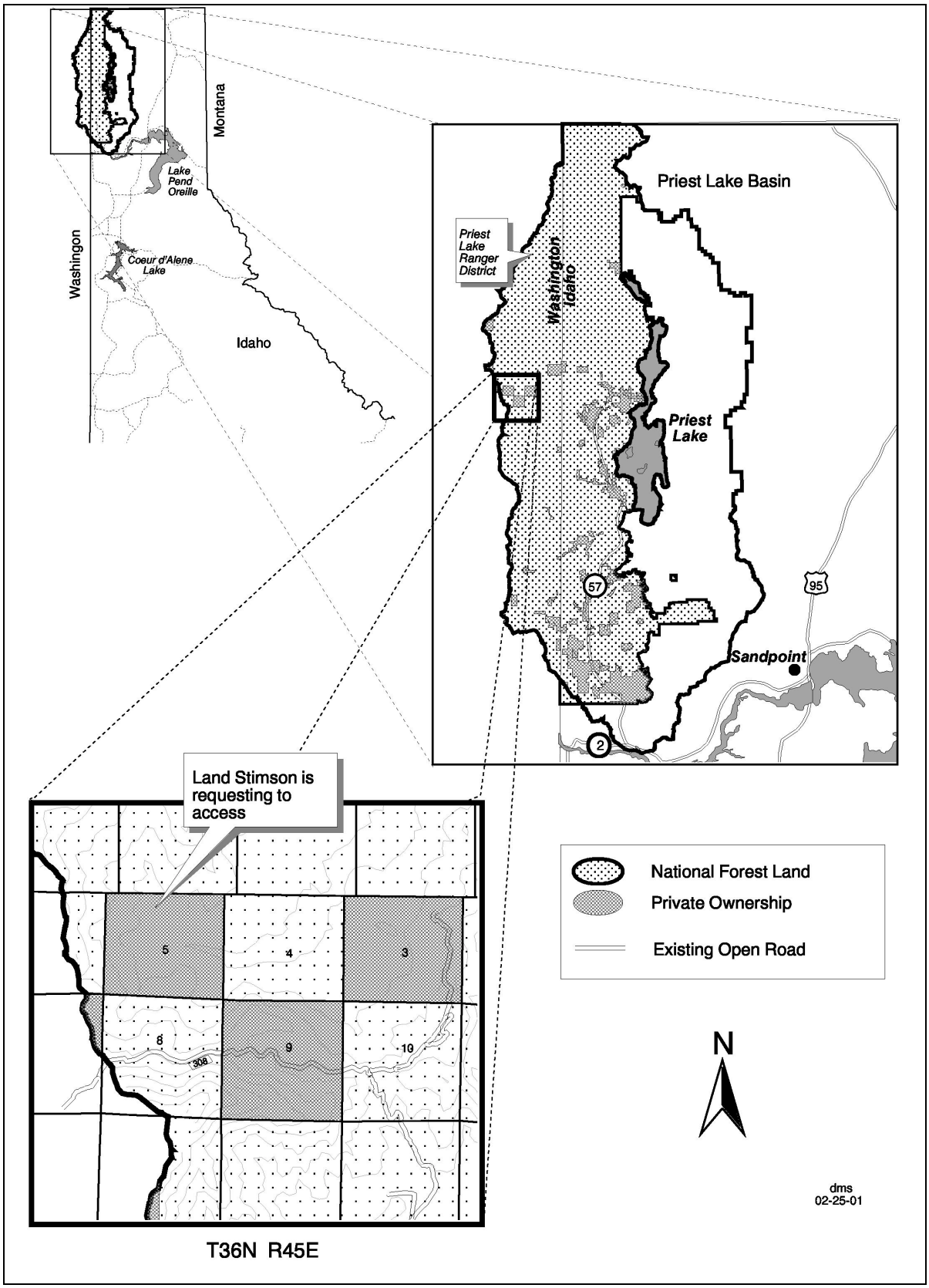

Figure 1. Vicinity Map of the Project Area

Determination Of "Reasonable Use And Enjoyment"

Federal Regulations at 36 CFR 251.114(a) state:

> "In issuing a special-use authorization for access to non-Federal lands, the authorized officer shall authorize only those access, facilities or modes of access that are needed for the reasonable use and enjoyment of the land and that minimize the impacts on the Federal resources. The authorizing officer shall determine what constitutes reasonable use and enjoyment of the lands based on contemporaneous uses made of similarly situated lands in the area and any other relevant criteria."

Contemporary Uses Made Of Similarly Situated Lands In The Area

The majority of similarly situated forested lands in the area are currently managed for varying intensities of timber production. Major land owners in the area and management emphases associated with those ownerships are described below.

Stimson Lumber Company ownership in the Upper Granite Creek drainage consists of three sections or 1,920 acres of land in a checkerboard pattern with Idaho Panhandle National Forest lands (see figure 1). Stimson Lumber Company is a private corporation. Management of its lands is focused on generating revenues from the resources located on them. Two of the Stimson Lumber Company sections of land are roaded and are managed for long-term timber production. In addition, there are numerous sections of Stimson Lumber Company lands in checkerboard pattern with Colville National Forest lands west of the Pend Oreille divide. These also are managed for long-term timber production.

To the northeast of the three Stimson Lumber Company sections in the Idaho Panhandle National Forest lies a section of land (Section 25) owned by Crown Pacific Lumber Company. This land has been and continues to be managed for long-term timber production.

Idaho Panhandle National Forest Lands surrounding the Stimson sections are managed for a variety of resources as described in land management allocations developed through the Forest planning process (USDA 1987 pp. III-2 to III-6 and pp. III-17 to III-22). While there are currently no plans for timber harvest, these lands are designated for timber production (MA-1), and for timber production within big game winter range (MA-4).

In reviewing the above conditions, it is the determination of the Forest that similarly situated lands in the Upper Granite Creek drainage are generally managed for long-term timber production utilizing conventional equipment requiring roads. Use of the lands to be accessed for these purposes is consistent with that of surrounding lands.

Other Relevant Criteria

In determining whether the intended use of the Stimson Lumber Company lands constitutes “reasonable use and enjoyment”, the Forest Service considered whether that use was likely to be consistent with laws and regulations applicable to those lands. Those laws include, but are not

limited to, the Washington Clean Air Act, the Washington Water Pollution Control Act, the Water Resources Act of 1971, and the Endangered Species Act. Stimson Lumber Company would be required to comply with all State and Federal laws and regulations applicable to private lands. Further information and rationale regarding these laws and regulations are documented in a letter from the deciding officer and located in the project file.

Other Determinations And Requirements

Lack Of Other Reasonable Access

Pursuant to Federal regulations at 36 CFR 251.114(f)(1), prior to issuing any access authorization, the authorizing officer must also insure that: *"the landowner has demonstrated a lack of any existing rights or routes of access available by deed or under State or common law."*

Section 5 is surrounded by National Forests System lands on all sides (see figure 1). No existing road access is currently authorized by the Forest Service.

Minimizing Adverse Effects

Pursuant to Federal Regulations at 36 CFR 251.114(f)(2), prior to issuing any access authorization, the authorizing officer must also ensure that: *"the route is so located and constructed as to minimize adverse impacts on soils, fish and wildlife, scenic, cultural, threatened and endangered species, and other values of the Federal land."*

The road locations described in the Proposed Action (Alternative B) and Alternative C were determined to be routes that minimize adverse effects to forest resources of concern. This determination was made after considering other possible routes and conducting preliminary analyses of effects associated with each potential road location. Refer to the section entitled Alternatives Considered But Eliminated in Chapter II for more information.

Compatibility With Land And Resource Management Plans

Pursuant to Federal Regulations at 36 CFR 251.114(f)(3), prior to issuing any access authorization, the authorizing officer must also insure that: *"the location and method of access is as consistent as reasonable with the management of any congressionally designated area and is consistent with Forest Land and Resource Management Plans or the plans are amended to accommodate the access grant."*

Lands on which the route is proposed are allocated to management emphases that allow road construction and timber harvest. Therefore, location of the route as well as the method of access is compatible with the Idaho Panhandle National Forests Plan.

Additionally, Forest-wide Forest Plan direction includes the following: *"Private landowners will not be denied reasonable access to their property, if unavailable across private land, subject to compliance with applicable regulations and Forest Service policies."* (USDA 1987, p. II-10)

On January 12, 2001, the Roadless Area Conservation Rule was published in the Federal Register. This rule was to take effect March 13, 2001. Implementation of this rule has been

delayed for 60 days. This moves the effective date from March 13, 2001 to May 12, 2001. This rule, when it becomes effective, will supersede existing forest plan management direction. However, this rule does not require amendments or revisions to the Forest Plan. A Forest Supervisor may consider whether an amendment or revision is appropriate given overall circumstances for their administrative unit. The proposed action is consistent with the Roadless Area Conservation Rule. The rule allows for the continuation of activities associated with reserved or outstanding rights provided by statute or treaty as stated in the Forest Service Roadless Area Conservation FEIS Summary (USDA 2000, p. S-22):

> *"These rights include, but are not limited to, rights of access provided in the [ANILCA] and highways rights-of-way granted over NFS lands under Revised Statute 2477. The most common type of access pursued in conjunction with these two prominent statures is roaded access."*

Proposed Action

The Proposed Action considered in this analysis is designed to meet the purpose and need described previously in this Chapter.

Granting Of Access

The Forest Service proposes to grant Stimson Lumber Company perpetual road access[1] through a special use authorization. This type of easement is authorized pursuant to the Forest Roads and Trails Act of October 13, 1964 (FRTA). This Act authorizes the Secretary of Agriculture to grant temporary or permanent easements for road rights-of-way over National Forest System lands. A FRTA Perpetual Road Easement is the appropriate authorizing instrument when the applicant is a cooperator requesting permanent access outside a cost-share area for construction and use of a road that will not be part of the Forest Development System. The access route would be located as displayed on figure 2. The easement width would be 66 feet.

Once access is granted, Stimson Lumber Company would be responsible for the following:

- Constructing and maintaining a road to Forest Service specifications. Stimson Lumber Company would be required to construct the road in a manner that meets all federal requirements relating to public safety and protection of forest resources.
- Removing all timber located within the clearing limits of the new road construction. The timber would then be appraised and sold by the Forest Service.
- Keeping the road closed with a gate year-round to restrict motorized access.
- Installing all drainage structures on the road and maintaining them.
- Implementing and complying with all other design and mitigation measures specified in Chapter II for the selected alternative.

Implementation Date

Granting of the access would occur immediately following completion of the decisionmaking process. However the actual construction of the road is likely to occur at a later time.

[1] Perpetual road access means the use can continue indefinitely unless the Forest Service finds breach of the use agreement has occurred or both parties agree to terminate the use.

Terms And Conditions

Construction and use of the road on National Forest System lands would be subject to certain terms and conditions necessary to meet provisions of Federal Regulations, 36 CFR 251.56. These terms and conditions apply only to the road located on the easement and not to any roads or activities occurring on private land accessed by the easement.

The following terms and conditions will be applied to the construction and use of the road.

Purpose Of Use

Use of roads located on the easement will be limited to operational and administrative activities associated with long-term timber management on the private land. Use of roads for other purposes will neither be authorized nor denied within this decision.

Activities related to long-term timber management occurring on the private lands are subject to all Federal, County, State and local laws and regulations under the jurisdiction of other agencies such as the Washington Department of Natural Resources, Washington Department of Ecology, Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service and the Environmental Protection Agency. Use of roads located on the access route is authorized only for activities that comply with all laws and regulations applying to non-Federal lands, administered by these agencies.

Construction Standards

Roads constructed on National Forest land for this project would be limited to those necessary to meet minimum Federal and State public safety standards and to protect federal resource values while supporting transportation of conventional timber harvest equipment and transportation of forest products from the site.

Roads will be constructed in accordance with Forest Service design standards, which provide for the protection of soil and water resources.

Scope Of The Proposed Action

The scope of the Proposed Action is limited to authorizing the use of a Perpetual Road Easement providing roaded access to Stimson Lumber Company land in Section 5, for uses related to long-term timber production. Use of roads located on the easement for purposes other than activities associated with long-term timber production are outside the scope of the Proposed Action and will neither be authorized nor denied through a decision related to this EA. Application for additional use of roads located on the easement would require additional analysis and authorization consistent with ANILCA, NEPA, ESA and other appropriate laws and regulations.

The Forest Service has no authority to regulate or limit uses occurring on Stimson Lumber Company lands. The Forest Service may limit such use only to the extent of the terms and conditions placed on the use of the easement. Proposals to regulate activities occurring on non-federal lands are outside the scope of the Proposed Action.

This EA describes actions on private lands that are "reasonably foreseeable" and are used to assess potential cumulative environmental effects (see “Reasonable Foreseeable Actions” below). Decisions related to these actions are outside the scope of the Proposed Action.

Scope Of The Environmental Analysis

In accordance with the NEPA, it is the responsibility of the agency to assess the direct and indirect environmental effects resulting from an agency action as well as the cumulative effects of all connected, past, present and reasonably foreseeable actions. The following direct, connected and cumulative actions are considered in this EA.

Road Construction On National Forest Land

Direct and indirect effects of the Federal action are limited to those resulting from the construction and use of a road in accordance with all provisions described in the Proposed Action.

Timber Harvest And Road Construction On Non-Federal Land

Stimson Lumber Company proposes to use the road and perpetual easement to conduct long-term timber management activities including timber harvest and conventional yarding systems.

Following issuance of the easement, it is reasonably foreseeable that Stimson Lumber Company will construct roads within Section 5 and that timber will be harvested. The nature and timing of harvest activities and exact location and design of roads constructed on the non-Federal lands is outside the discretion of the Forest Service.

The effects analysis presented in this EA is based on a reasonable scenario for these future activities and assumes that proposed harvest and road construction activities occurring on Stimson Lumber Company lands will comply with all State and Federal laws and regulations

Use of the projections of activities occurring on Stimson Lumber Company lands is for analysis purposes only. The Forest Service has no responsibility or authority to assure that activities occurring on non-Federal lands will occur as projected. Nor does the Forest Service have the responsibility or authority to assess or enforce compliance with laws outside its authority.

Past Timber Harvest And Road Construction

Timber harvest and road construction have occurred in the general area for decades. Existing roads and harvested areas affect resource conditions such as grizzly bear habitat and sediment delivered to streams. The effects of these past activities have been considered in appropriate analyses.

Present Timber Harvest And Road Construction

No road construction or timber harvest activities are known to be occurring on the federal lands where an easement could be granted. Within the broader cumulative effects analysis areas,

particularly that used for grizzly bear habitat analysis, road construction and harvest activities are ongoing and specifically considered in that analysis.

Other Present and Ongoing Activities

Other activities that may be considered within cumulative effects analyses include trail maintenance, Huff Lake Interpretive Site, outfitter/guide permitted activities, snowmobile use and grooming, developed recreation site activities, and recreation activities such as hiking, berry picking, hunting, and firewood gathering. These activities are considered in cumulative effects analyses where appropriate.

Reasonably Foreseeable Actions

The following reasonably foreseeable actions are considered within cumulative effects analyses in Chapter III commensurate with each resource analyzed and the cumulative effects area defined.

- Logging and road construction on Stimson lands in Section 5
- Road maintenance activities on Federal and private lands
- Noxious weeds monitoring and treatment on Federal and private lands
- Timber harvest on Crown Pacific Inland Company land in Section 25, T37N, R45E.

Similar Actions

Similar actions are those which when viewed with other reasonably foreseeable or proposed actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.

The Colville National Forest is currently evaluating a similar access request by SLC across National Forest lands just west of the project area (Stimson ANILCA Access Easement FEIS, USDA 2000). This similar action has been considered where appropriate, in cumulative effects analyses and discussions within this EA.

Decision To Be Made

After distribution of this EA for public review, the public will have 30 days to submit comments. This EA is not a draft; however, public comments will be reviewed and considered by the deciding officer prior to making a decision and issuing a Decision Notice. Responses to comments will be incorporated into the Decision Notice.

Also during this time, the deciding officer will determine whether the proposed project would have a significant impact on the environment. If the deciding officer finds there would be a significant impact, the decision on the access request would be deferred until an Environmental Impact Statement could be completed. If he finds there would be no significant impact, his determination and rationale would be documented in a “Finding of No Significant Impact.”

Scope of the Decision

As mentioned previously, the provision of ANILCA regarding access across National Forest lands to private lands narrowly limits the scope of the proposed action, as well as the range of reasonable alternatives. Consequently, it also narrows the scope of the decision for the deciding officer.

There are two elements of decision to be made. The first decision is essentially which access route to provide to Stimson Lumber Company. The decision must assure that " *the route is so located and constructed as to minimize adverse impacts on…*[resource] *values of the Federal land"* (36 CFR 251.114(f)(2)), and is consistent with all pertinent laws and regulations applicable to the management of National Forest lands. The other decision element to be made constitutes the reasonable terms and conditions that will apply to this access pursuant to 36 CFR 251.56.

CHAPTER II - Alternatives

Introduction

Alternatives to the Proposed Action were created after soliciting and receiving public comments on the proposal. The interdisciplinary team evaluated the issues raised in public comments and then developed alternatives based on these issues, Forest Service issues and the Purpose and Need for the project. The next two sections describe the Public Involvement methods used and the issues that were raised. Details of the Proposed Action and the alternatives to it comprise the remainder of this chapter.

Scoping And Public Involvement

Scoping is the process used by the Forest Service to identify the important issues associated with a proposed action. Scoping involves considerations by Forest Service resource specialists, consultation with County, State and other Federal agencies, Native American Tribes, and public input.

Public scoping for this project was initiated in October of 1997 with publication in the Idaho Panhandle National Forests Quarterly Schedule of Proposed Actions. In April of 1998, a letter announcing the initiation of an Environmental Assessment was mailed to 20 agencies, organizations and individuals interested in receiving project proposals. Two organizations submitted comments, and two more organizations and three individuals requested to continue receiving information. A consultation meeting with the Kalispel Tribe of Indians was held on July 22, 1998, and numerous phone and personal contacts have been made since then. The project has continued to be listed on the quarterly schedule since 1997 and was shown as "on hold" between January 2000 and January 2001 because of other District and Forest priorities such as the Douglas-fir Beetle outbreak.

As a result of a lawsuit filed by Stimson Lumber Company against the Forest Service to gain access to their land, a motion to stay proceedings was granted from January 18th until February 28th, 2001 while the Forest Service prepared this Environmental Assessment. On February 1, 2001, a new scoping notice was sent to 36 members of the public, tribes, agencies, organizations, and to those who commented or expressed interest previously. Due to the short timeframe allowed to complete the EA, a two-week comment period was established, ending on February 16th. A news release was sent to local newspapers and radio stations on February 6th. Articles appeared in the Spokesman Review, Priest River Times, and the Bonner County Daily Bee that week. A total of 35 people contacted the Forest Service about the 2001 notice. Of these, 27 people, organizations and agencies submitted comments, and seven people, including four from news media, requested information. All comments received on the proposal to date have been considered in this analysis and are located in the project file. Concerns generated from these comments are included in the issues described below.

Issues

Issues are essentially concerns raised about the effect of a proposed action on the forest resources or the human environment that depend on the ecosystem where the proposal is to occur. For this analysis, the issues generated by the public, agencies, organizations, and the Forest Service are categorized into two types:

- **Significant issues** are those within the scope of the project and of sufficient concern to drive the development of alternatives, or are important for their value in analyzing effects. The issues are specific to this geographic area and proposal, and provide a good comparison between alternatives during analysis.

  The IDT identified indicators for each issue to measure how the issue was affected by each alternative. Each issue may have more than one indicator, depending on its complexity. Issue indicators were selected for their ability to show the difference among alternatives.

- **Issues Not Addressed In Detail** are those that do not warrant further analysis because preliminary assessments showed that project activities or designs would have very limited or no effect on the resource of concern, or the issue was not relevant to the scope of the project.

Project activities are analyzed for their direct, indirect, and cumulative effects on the identified resources of concern. Direct and indirect effects focus on those effects to resources that could result from proposed activities. For this analysis, direct and indirect effects analyzed will focus only on those activities that occur on National Forest lands.

Cumulative effects consider the total effects of the proposal, along with past, present and reasonably foreseeable future actions on the resources. For those resources where direct and indirect effects are identified in analysis, cumulative effects will take into consideration the reasonably foreseeable activities proposed to occur on Stimson Lumber Company Land as well as activities proposed on any other private or Federal lands within each cumulative effects analysis area.

Key Issues

Issue: **Effects To Grizzly Bear, Lynx, And Their Habitat -** Grizzly bear and lynx are both designated as Threatened Species. The proposed action falls within the Kalispell/Granite Grizzly Bear Management Unit and there are concerns that it could potentially change the amount of core security. There are also concerns that the proposal could affect lynx denning habitat. Other wildlife species issues that were not addressed in detail are discussed later in this chapter.

Issue Indicators Measured:

- Acres of core and security habitat for grizzly bear affected
- Acres of suitable lynx habitat affected

Issue: **Effects To Aquatic Resources and Bull Trout -** The Bull Trout is currently listed as a threatened species. There are concerns that road construction could affect sediment delivery and/or channel characteristics, negatively impacting water quality and fish habitat.

Issue Indicators Measured:

- Quantity of sediment delivered to stream
- Changes to channel morphology
- Amount of riparian vegetation removed
- Risk of sediment delivery from roads at stream crossings
- Number of culverts in fish-bearing streams

Effects To The Roadless Resource - The proposed activity would occur within a portion of the South Fork Mountain Roadless Area 1-124 as identified in the 1987 Forest Plan for the IPNF (Addendum to Appendices C, page C-22-31). The proposed action could affect the roadless character of this area.

Issue Indicators Measured:

- Changes to natural integrity, apparent naturalness, remoteness, solitude and special features of the South Fork Mountain I.R.A and the entire Roadless Area Complex
- Acreage with roadless character within the South Fork Mountain I.R.A and the entire Roadless Area Complex

Effects To Threatened, Endangered, and Sensitive (TES) and Rare Plants – There are concerns that proposed road construction could affect population viability of TES plants.

Issue Indicators Measured:

- Presence of populations
- Acres of suitable habitat affected

Effects To Noxious Weed Invasion and Spread - There are concerns that proposed road construction and use could spread existing weed infestations and/or cause the introduction of new weed invaders.

Issue Indicators Measured:

- Presence and extent of known weed infestations
- Acres of habitat susceptible to weed invasion

Effects on Soil Productivity – There are concerns that road construction would affect soil productivity.

Issue Indicator Measured:

- Amount of soil on National Forest lands taken out of production

Effects on Recreation Opportunities – There are concerns that construction of a new road, although closed to motorized use, could alter the recreational use patterns or experience in the project area.

Issue Indicator Measured:

- Change in Recreation Opportunity Spectrum.

Issues Not Addressed in Detail

These are resource concerns identified during scoping that are not relevant to the proposed action or have been satisfied in all action alternatives through project design and/or the use of management requirements or mitigation measures. There is no further discussion of these issues in this document. The following lists the issues and summarizes briefly why they are not addressed in detail. Further rationale and documentation are in the project file.

Effects of Stimson Lumber Company's activities on the forest resources within their private land boundary - For this project, the Forest Service has limited the scope of analysis to proposed activities on Federal land and to those aspects of the reasonably foreseeable private actions that could have additive effects with the federal action. In evaluating access requests under Section 1323(a) of ANILCA, the Forest Service may properly limit the scope of the NEPA analysis because it has no discretion to deny reasonable access, it has no regulatory authority over actions on private lands, and because there is no federal involvement in the private action (see Sylvester v. U.S. Army Corp of Engineers, 9th Circuit, 1989). In the case of access under ANILCA, the Forest Service's discretion is limited to deciding the location and mode of access, but there is no discretion to decide whether access sufficient to secure the landowner the reasonable use and enjoyment of their land will be provided.

Applicability Of ANILCA To Lands Other Than In Alaska – Some people have stated that the ANILCA is not applicable to lands in the lower 48 United States. Section 1323 (a) of the ANILCA specifically states:

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

This provision applies nationwide and the Forest Service has no discretion to deny access where the provisions of section 1323(a) of ANILCA are met (see Montana Wilderness Association v. U.S. Forest Service, 9th Circuit, 1981 and Adams v. United States, 9th Circuit, 1993). Considering this provision of ANILCA, this issue has been eliminated from further analysis.

Requirement to Prepare an Environmental Impact Statement Instead of Environmental Assessment – An environmental assessment has been prepared to determine if there are significant effects to the environment from the proposed action. The results of this analysis will determine if an Environmental Impact Statement is necessary.

Effects of New Road Construction on Heritage Resources - Cultural resource surveys of the project area have been completed as directed by the Forest Plan (Appendix FF) and concurrence on the report's determination has been obtained from the Washington Office of Archaeology and Historic Preservation (see project file). One site was inventoried and deemed not eligible for the historic register. However, it would be protected from project activities under both action alternatives through design features and, therefore, would not be affected. Any cultural resource sites discovered during project activities would be inventoried and protected if found to be of cultural significance. Therefore, this issue has been eliminated from further analysis.

Effects on Sensitive and Other Wildlife Species Habitat – The following wildlife species are discussed in the Wildlife Affected Environment section of Chapter III but are not carried further into analysis due to minimal effects: Northern gray wolf, Woodland Caribou, Black-backed woodpecker, Northern bog lemming, fisher, wolverine, and forest land birds. Rationale stating why they are not analyzed further is stated in the Wildlife Affected Environment section and the project file. Other wildlife species were not analyzed because there would be no measurable effect to their habitat. Rationale for eliminating these species from analysis is located in the project file.

Effects of New Road Construction on Rain-On-Snow Induced Peak Flows – The access routes on National Forest land would not contribute to rain-on-snow induced peak flows because they are narrow linear features and do not create the expansive and unobstructed openings necessary to escalate peak flows. For these reasons, this issue has been eliminated from further analysis.

Effects of Activities on Kalispell Creek – Proposed activities would not drain into Kalispell Creek; therefore, this issue was eliminated from further analysis.

Effects of Endangered Species Act (ESA) Requirements on Restricting Access to Private Lands – Section 7 of the ESA directs Federal agencies to ensure that actions funded or carried out by the agency are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat. Under ANILCA, the Forest Service must authorize access that minimizes impacts on Federal resources while meeting all applicable laws and regulations of National Forest management, including the Endangered Species Act. For these reasons, this issue has been eliminated from further analysis.

Effects of New Road Construction on Scenic Qualities – The effects of the proposed activities on scenic qualities on National Forest lands would be minimal and not visible from sensitive viewpoints. The area is designated as maximum modification in the Forest Plan, which means

that the scenic integrity level refers to landscapes where the valued landscape character "appears highly altered." For these reasons, this issue has been eliminated from further analysis.

Effects of New Roadless Rule on Ability to Construct a Road in a Roadless Area – The Roadless Rule allows for access requests to be honored under rights of access provided in the ANILCA, acknowledging that roaded access is the most common type of access (please refer to Chapter I – Compatibility with Land and Resource Management Plans). For this reason, this issue has been eliminated from further analysis.

Effects of the Access Project on Increased Fire Risk – Windrowing slash along the toe of the constructed road fill slope is not expected to appreciably increase fire hazard on National Forest land. Activities on Stimson lands would comply with state and federal laws and regulations. For these reasons, this issue has been eliminated from further analysis.

Proposed Easement Width Is Larger Than County Allowances – County easement standards are not applicable to roads on National Forest lands. For this reason, this issue was eliminated from further analysis.

Effects of New Road Construction on Old Growth – Neither of the proposed access routes would pass through old growth; therefore, this issue has been eliminated from further analysis.

Effects of New Road Construction on Range – There are no range allotments in or near the project area; therefore, this issue has been eliminated from further analysis.

Effects of New Road Construction and Use on Air Quality – Indirect effects of the proposal on air quality would be limited to minor amounts of dust production during use periods. Effects would be extremely local in nature and indistinguishable between alternatives; therefore, this issue has been eliminated from further analysis.

Financial Costs of New Road Construction and Maintenance – The only costs that would be incurred to the government due to the proposed action or alternative would be permit administration costs; therefore, this issue has been eliminated from further analysis.

Economic effects of road building on public land and the resulting damage to and loss of ecosystem values – Under ANILCA, the Forest Service's discretion is limited to deciding the location and mode of access. There is no discretion to decide whether access sufficient to secure the landowner the reasonable use and enjoyment of their land will be provided. The potential loss of ecosystem service values as a result of road construction on public land has been adequately addressed in the effects analysis of this document by assessing the effects of the proposed activities on wildlife species, plant species, water quality, recreation, and the roadless resource (please refer to Chapter III).

In addition, the Northern Region Forest Service publication Economic Analysis for Forest Plan Implementation (USDA 1989) provides guidance for determining the level of appropriate economic analysis for project-specific decisions. It states "[u]sually it is not appropriate to consider non-market effects in financial terms at the site-specific level. If the objective is to

produce non-market outputs and market outputs are incidental, a cost effectiveness analysis determining least cost is usually sufficient".

Economic Effects Of Not Allowing Access To Private Land For Timber Management – The Forest Service is required by the ANILCA to provide access to non-federal land when no other reasonable access exists, and only has the discretion to consider the location and mode of access, subject to determining the reasonable use and enjoyment of the property (see Chapter I). Since the Forest Service does not have the discretion to prohibit access, this issue was eliminated from further analysis.

Effects to Low Income or Minority Populations – In 1994, President Clinton signed an executive order on Environmental Justice requiring federal agencies to conduct activities related to human health and the environment in a manner that does not discriminate or have an effect of discriminating against low income and minority populations. The executive order also specifically directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish and wildlife. During consultation with the Kalispel Tribe of Indians regarding this project, no direct or indirect effects to current subsistence practices on Federal lands were identified in either action alternative. However, the Tribe was concerned about the effects of timber harvest on botanical resources that occur in the Sema Meadows area on Stimson lands that would impact their ability to gather traditionally important plants within this area. These effects would occur on private lands outside the jurisdiction of the Forest Service. The action of the Forest Service to grant access is non-discretionary.

Development Of Alternatives

Alternatives are generated to provide a reasonable range of actions that satisfy the purpose and need and to explore alternative courses of action to address identified issues. Due to the scope of this proposed action, alternatives are very limited. The connected action of timber harvest occurs on non-Federal lands, thus silvicultural and scheduling options are outside the scope of the Forest Service proposed action. Therefore, alternatives are limited to the least impactive access options on National Forest lands.

Three alternatives were developed in detail to address the key issues. These alternatives include Alternative A, the "no action" alternative; Alternative B, the proposed action, which is to grant the easement as requested; and Alternative C, an alternative route. Additional alternatives that were developed but not considered in detail are discussed later in this section.

Alternatives Considered In Detail

Alternative A - No Action

This alternative would deny Stimson Lumber Company access across National Forest lands at this time. This alternative is required by The National Environmental Policy Act (NEPA) to be considered, and provides the basis for which to compare effects of action alternatives. It does not meet the access requirements of ANILCA for reasons described in Chapter I.

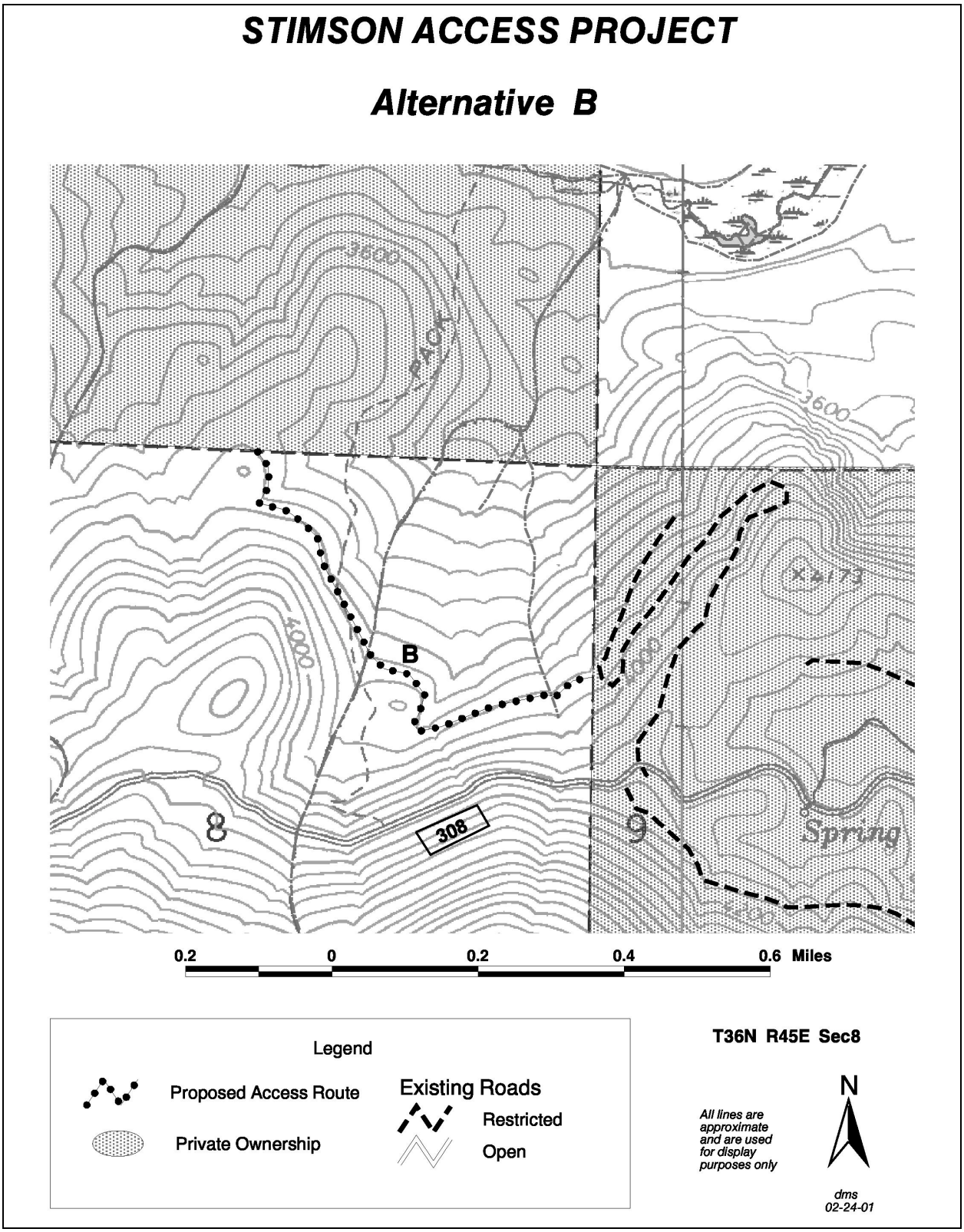

Figure 2. Map of Alternative B—the Proposed Action.

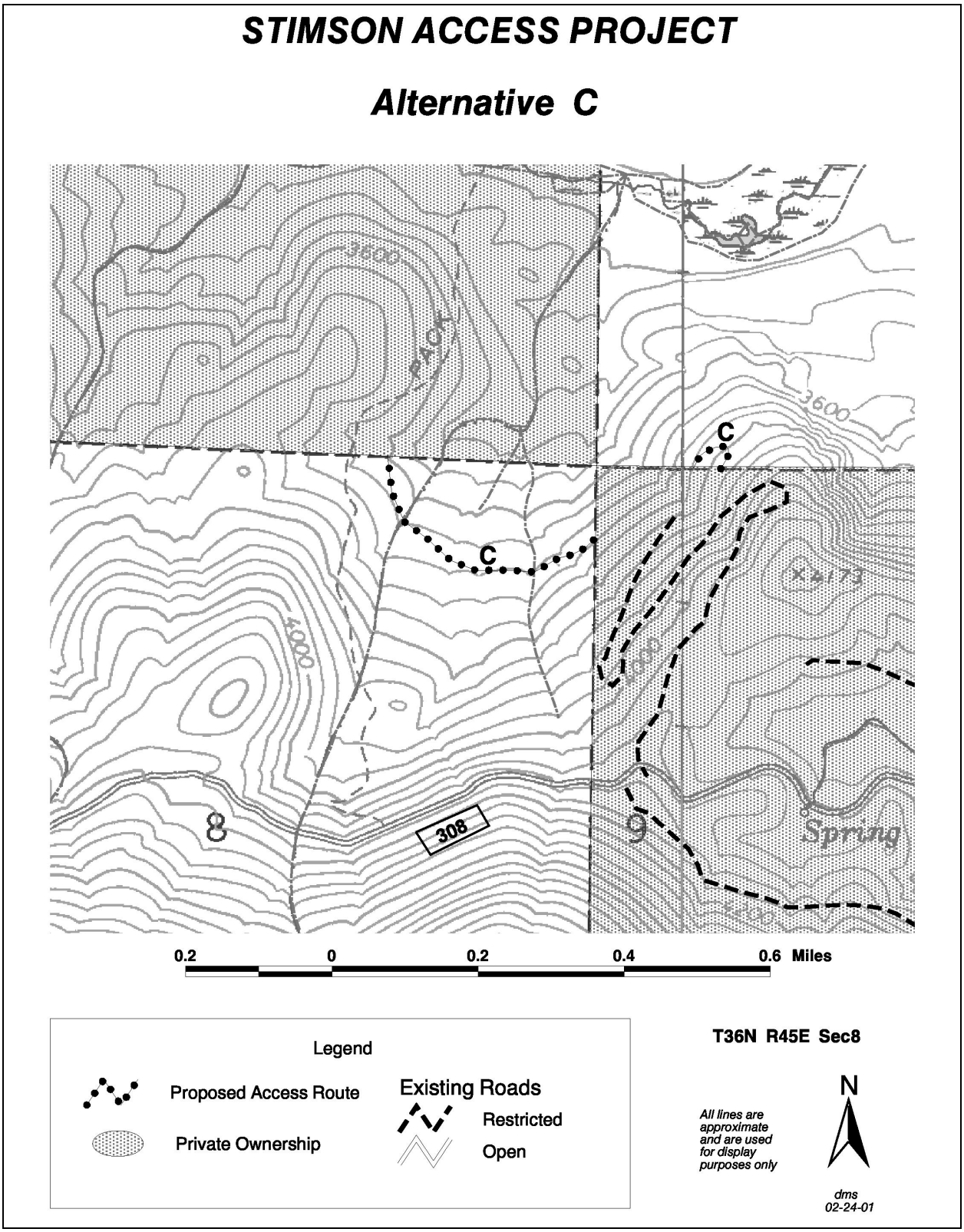

Figure 3. Map of Alternative C—the Alternate Route.

Alternative B - Proposed Action

This alternative would grant Stimson Lumber Company an easement about 4,000 feet (0.75 mile) in length by 66 feet in width on National Forest in Section 8 (see figure 2). This access would allow Stimson to construct a road that would be an extension of an already existing road on Stimson property in Section 9. Timber within the right-of-way that needs to be cleared for road construction would be appraised and sold by the Forest Service.

This alternative meets the purpose and need for access required by ANILCA and the IPNF Forest Plan by granting the access as requested by Stimson Lumber Company.

Designs and Mitigation Measures Specific to Alternative B

Features Designed to Protect TES and Rare Plants

All currently documented sensitive plant occurrences would be buffered from any road construction or related activity. The easement as currently proposed under this alternative would be located at least 200 feet away from any sensitive plant populations.

Estimated Effectiveness: high; by locating the easement as proposed, protection of the documented occurrences of moonworts would preserve current habitat conditions and greatly reduce the possibility of incidental impacts to undetected individuals. Protection of the deerfern population would preserve current habitat conditions and eliminate the risk of impacts to the population.

Features Designed to Protect Heritage Resources

There is only one heritage site identified in the project area--the Sema Creek Trail #241. This site is not eligible to the National Register of Historic Places, however, the trail would be clearly marked where new road construction bisects it to aid in future identification of remaining trail sections.

Estimated Effectiveness: high; trail markings such as blazes would ensure feasibility of locating the trail in the future.

Alternative C – Alternate Route

This alternative would grant Stimson Lumber Company an easement about 2,500 feet (0.47 mile) in length by 66 feet in width. This easement would consist of two segments on National Forest, a short portion in Section 4 and a longer segment in Section 8 (see figure 3). This access would allow Stimson Lumber Company to construct a road that would be an extension of an existing road on Stimson property in Section 9. This alternative would also require an additional 0.28 miles of road construction on Stimson property in Section 9. Timber within the right-of-way that needs to be cleared for road construction would be appraised and sold by the Forest Service.

This alternative meets the purpose and need for access required by ANILCA and the IPNF Forest Plan by granting the access as requested by Stimson Lumber Company.

Designs and Mitigation Measures Specific to Alternative C

Features Designed to Protect Wildlife

Lynx Denning Habitat – Construction of the new road would not take place during the lynx denning period (April 1 through July 1).

Estimated Effectiveness: high; avoiding activities during the critical denning period would reduce the likelihood that denning lynx would be displaced.

Features Designed to Protect TES Plants

As much as is feasible, the easement would be relocated to provide an optimum 100 feet or more buffer of the known moonwort occurrence.

Estimated Effectiveness: moderate to high; the buffer would minimize, but not eliminate, the risk of indirect effects to the moonwort population and its habitat. While the occurrence would be protected from direct impacts, it is likely that individuals on the edge of the population would be impacted by increased light from canopy removal within the easement. A 100 feet buffer would provide adequate protection of the occurrence from "edge effect".

Features Common to Alternatives B and C

The following designs and mitigation measures are to be implemented if Alternative B or C is selected.

Features Designed to Protect Threatened, Endangered and Sensitive (TES) Wildlife Species

Road Restrictions – The newly constructed road across National Forest land would be closed to all non-authorized motorized vehicles, including those less than 40 inches in track width.

TES Species Sightings – any threatened, endangered, or sensitive species (including species proposed for threatened or endangered listing) discovered during use of the easement would be reported as soon as possible. For threatened, endangered or proposed species, a Forest Service biologist would implement immediate consultation, if necessary, with the U.S. Fish and Wildlife Service. For sensitive species, the Priest Lake District Ranger would be consulted. These consultations would determine if any site-specific measures would be needed to protect the species and/or its habitat.

Features Designed to Protect Soil, Water, and Fish Habitat

Best Management Practices - The use of Best Management Practices (BMPs), identified in the Memorandum of Understanding between the Forest Service and the State of Washington, ensures that non-point source pollution from Forest Service management activities meets state water quality standards established under Section 319 of the Clean Water Act. The objective of

these measures is to minimize effects of management activities on soil and water resources. A list of the BMPs to be used for this project can be found in Appendix A.

Inland Native Fish Strategy (INFS) Guidelines - All INFS standards would be met (USDA 1995). Specific INFS measures applicable to this project include the following (INFS, RF-2 p. E-7 and RF-4 p. E-8):

- For each existing or planned road, meet the Riparian Management Objectives and avoid adverse effects to inland native fish by:
  Avoiding Sediment delivery to streams from the road surface (RF-2d):
  1) Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.
  2) Route road drainage away from potentially unstable stream channels, fills and hillslopes.

  Avoid disruption of natural hydrologic flow paths (RF-2e).
  Avoid sidecasting of soils or snow within RHCAs. (RF-2f).

- Construct new stream crossings to accommodate a 100-year flood, including associated bedload and debris. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not protect priority watersheds from increased sedimentation. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

Estimated Effectiveness: **moderate**; in meeting these INFS standards the risk of delivery sediment to stream channels would be minimized (INFS 1995, Furniss 1991).

Additional Site Specific Protection Measures – In addition to BMPs and the INFS guidelines, the following design features and protection measures would be carried out:

Stream Crossings: Stream crossings would be designed to prevent channeling of streamflows by roads. Crossings with a high risk of failure would be designed to pass flows without fill failure or significant erosion. Road segments intercepting and directly delivering water to streams would be designed to limit water delivery. All stream crossings would be designed to pass the equivalent of a 100-year streamflow event. Ditchlines feeding into any stream cannot exceed 100 feet on either side of a channel or spring.

Estimated Effectiveness: **moderate**; installation of additional relief culverts would reduce the amount of water and sediment carried by and eroded from ditchlines.

Ditchline , Cutbank and Fillslope Stabilization: The following design criteria would reduce sediment delivery to streams:

All ditchlines within 150 feet on any live stream crossing would be lined with angular rock to prevent ditchline erosion.

All disturbed soils would be fertilized, seeded and mulched as soon as practical after initial soil exposure. Exposed slopes within 150 feet of live stream crossings would be hydroseeded.

For each acre of disturbed soils, the following would be applied:

- 10 lbs. highlander slender wheatgrass
- 10 lbs. Bromar Mt. Brome grass
- 10 lbs. Sodar streambank wheatgrass
- 5 lbs. Sandberg bluegrass
- 60 lbs. of nitrogen
- 60 lbs. of phosphorous
- 40 lbs. of potassium
- 20 lbs. of sulphur
- 3 bales of certified weed free straw OR hydroseeding

No fertilizer would be applied within 100 feet of any stream or spring.

Exposed soils above culvert inlets would be stabilized using angular rock measuring no less than 10 inches diameter. This rock would be placed on the raw soils above the culvert inlets for as high as the soils are exposed and for at least the width of the contributing cutbank, OR on either side of the culvert for 5 times the width of the stream, whichever is wider.

Slopes that are identified by a geotechnical engineer as being unstable would be stabilized using geogrid materials.

Road construction would not occur during wet periods when there is a high likelihood of erosion and sediment delivery.

Clearing slash will be placed at the toe of the fill slope as a filter windrow. Windrows would not be built across stream courses and would have breaks every 100 feet to allow for wildlife movement. All windrows would be constructed to maximize the interception of sediment moving downslope.

Estimated Effectiveness: **high;** these measures would reduce sediment production and delivery by minimizing mass erosion and existing surface erosion near stream crossings. Erosion control measures would limit sediment generated from newly excavated sites. Slash filter windrows can reduce sediment delivery 75 to 85% (Cook and King 1983). Hydroseeding of cut and fill slopes can reduce sediment delivery up to 80% (Burroughs and King 1989).

Culvert Installation and Maintenance: Specific design criteria to control sediment delivery during culvert installation and maintenance consist of the following:

Standard erosion control measures such as temporarily diverting flow into a culvert, a plastic or rock lined channel, pumping water below the site, or use of silt fences or hay bales would be used to minimize sediment transport downstream.

Ditch relief pipes would be installed at a skew of 3% off of the road grade and have a minimum of a 5% grade.

Pipe locations would be marked with a flexible plastic marker to ease finding the pipes for future monitoring and maintenance.

Estimated Effectiveness: **high**; prescribed BMPs which address standard erosion control measures would significantly reduce this risk of sediment delivery by controlling the water at the worksite and minimizing the contact of the water to the exposed soils. Installing relief pipes at an angle allows the pipe to be somewhat self-maintaining. Clearly marking the location of the relief pipes and stream crossings would allow individuals assigned to regular maintenance to more easily locate pipes and track maintenance needs.

Armoring Road Prism: To minimize the amount of sediment that could be delivered from the road prism, angular rock would be placed at a depth of 6 inches over the more sensitive areas. These areas would be designated by a geotechnical engineer.

Estimated Effectiveness: **high**; surfacing native surface roads has been shown to decrease sediment production 70 to 84 percent (Swift 1984, Foltz and Truebe 1995, Burroughs and King 1989). Burroughs and others (1985) found that graveled road surfaces produced an average of 77 percent less sediment than bare roads.

Rolling the Road Grade: Roll the road grade to disperse water from the road surface as often as possible.

Estimated Effectiveness: **high**; graded rolling dips and drivable dips would reduce the amount of water that runs down the road surface. This would reduce the loss of fine material from native and graveled surfaces. The potential for sediment production and delivery would be reduced because of the improved dispersion and re-infiltration of water.

Features Designed to Protect Wildlife Habitat

Grizzly Bear Security – Motorized vehicle access would be restricted on the proposed access roads when not being used by Stimson Lumber Company to manage their lands in Section 5. The existing SLC gate on their road in Section 9 serves this purpose. If the existing gate is opened for SLC management activities on their lands in Section 9, an additional gate or barrier would be required to effectively maintain this restriction on the proposed access route to Section 5.

Estimated Effectiveness: **moderate**; monitoring has shown that gated road closures are effective in controlling most motorized access, but recognizes that limited breaching by off road vehicles still occurs within some areas.

Features Designed to Prevent Noxious Weed Invasion and Spread

All equipment to be used for road construction would be washed before entering National Forest lands.

Estimated Effectiveness: **high**; removal of soil potentially contaminated with noxious weed seed and of plant parts of noxious weeds would prevent the introduction of weeds via equipment into the area.

Following road construction, the private landowner would be required to seed and fertilize cut and fill slopes with an approved, certified weed-free, native and desired non-native seed mix. The private landowner would be required to monitor the road annually for noxious weeds (see Appendix B for the list of weeds) for three years following each period of use. Any noxious weeds found would be treated according to guidelines in the Priest Lake Noxious Weed Control Project Final EIS (USDA 1997). A monitoring and treatment report (and pesticide use report as applicable) would be prepared and submitted to the IPNF North Zone Weed Coordinator annually during each three-year period.

Estimated Effectiveness: **moderate to high**; the requirement to seed disturbed areas and monitor and treat weeds following periods of use is expected to minimize introduction and establishment of noxious weeds. The Priest Lake Ranger District currently treats Forest Roads 308 and 311 for weeds. Monitoring and treatment of the new road segment would complement efforts by the district to reduce weeds in the area. If Stimson does not treat weeds on the adjoining privately owned road segment in Section 9, effectiveness of the measures is estimated to be moderate. With monitoring and treatment by Stimson on the adjoining private road and on the new road segment on National Forest lands, effectiveness of the measures is predicted to be high.

Monitoring

The Forest Plan documents a system to monitor and evaluate Forest activities. Monitoring is designed to gather the data necessary for project evaluation. During evaluation of project effectiveness, data gathered during monitoring are analyzed and interpreted. This process provides periodic data necessary to determine if implementation is within the bounds of the project design (Forest Plan, page IV-7).

The following monitoring items would be conducted if Alternative B or C were implemented:

Grizzly Bear Security Monitoring– Stimson Lumber Company would provide to the Forest Service at the end of each "bear year" (from March 15 to November 15) a listing of vehicle trips by date and activity type (i.e. survey, monitoring, maintenance, etc.).

BMP Implementation and Effectiveness Monitoring – The Forest Service would monitor the implementation of applicable BMPs (see Appendix A) and mitigation measures on National Forest lands. The monitoring would be documented in inspection reports that would be forwarded to the Washington Department of Ecology. BMP effectiveness would be monitored following at least one runoff season after BMP implementation. Monitoring activities would be conducted through the fifth year after project implementation, subject to availability of funding.

Noxious Weed Monitoring – Stimson Lumber Company would monitor their easement across the National Forest for noxious weeds for a term of three years following each period of use. A monitoring report would be submitted to the Priest Lake Ranger District annually during the three-year period. Should any noxious weed infestations be identified, those infestations would be treated according to guidelines in the Priest Lake Noxious Weed Control Project FEIS and ROD (USDA 1997). A weed treatment report, including a pesticide use report would be submitted to the Priest Lake District.

Endangered Species Act Monitoring - Per the January 19, 2001 Memorandum of Understanding between the Forest Service, Bureau of Land Management, National Marine Fisheries Service, and the Fish and Wildlife Service, the Forest Service would conduct monitoring needs on federal land that have been identified as necessary to determine the scope and scale of any effects that activities occurring on private land may have on federal land. Both parties would agree upon necessary monitoring activities during the consultation process.

Road Construction Monitoring – During road construction activities on National Forest land, the Forest Service would monitor road construction activities as necessary to ensure that project design and mitigation measures are implemented as planned.

Alternatives Considered But Eliminated

During scoping, a number of alternatives were generated by the Forest Service and suggested by commenters. These alternatives were considered but were determined either to not meet the purpose and need or were determined to be outside the discretion of the Forest Service to implement. A general description of each of these alternatives is provided, with an explanation of why they were not considered in detail. Further documentation is located in the project file.

Section 3 Connection - this alternative route would require an easement on National Forest lands to connect to Stimson Lumber Company's existing roads in T36N, R45E, Section 3. The easement would require 1.17 miles of road construction, which would cross National Forest in Section 4. This alternative would create a larger reduction in Grizzly Bear security habitat than Alternatives B and C since this proposed route is further from currently open roads This alternative would require crossing a tributary of Sema Creek at a wide floodplain, which would cause adverse impacts to the watershed and fisheries resource. The South Fork Mountain Area would be reduced by several hundred acres of National Forest lands in this proposal. For these reasons, this alternative was dropped from further consideration.

Section 9 Connection - this alternative route would start on Stimson Lumber Company property, but would cross onto National Forest lands in Section 4. An easement on National Forest would be required for construction of 0.93 miles of road. Stimson Lumber Company would need to build 0.14 miles of road on their property. This alternative would create a larger reduction in Grizzly Bear security habitat, since this proposed route is further from currently open roads. This alternative would require crossing a tributary of Sema Creek at a wide floodplain, which would cause adverse impacts to the watershed and fisheries resources. The crossing location has a high potential for sensitive plants because of its floodplain character, and would have the potential for affecting any existing sensitive plants. Also, more acres of the South Fork

Mountain Roadless Area also would be affected. For these reasons, this alternative was dropped from further consideration.

Helicopter Access - this alternative would not require an easement across National Forest System lands. The only access to the private property would be by helicopter. Besides being costly to Stimson Lumber Company, this alternative would not provide reasonable access to their private property for long-term management, which could include activities such as thinning, burning, planting, brush disposal, and other timber harvest. For these reasons, this alternative was dropped from further consideration.

North Access Section 31 - this alternative would allow Stimson reasonable access to manage their properties, however it would require the longest easement, and road construction of 1.86 miles on National Forest. It was not considered reasonable due to the unacceptable impact it would have on Grizzly Bear security habitat. This alternative would also have the potential to affect other wildlife species on National Forest lands such as woodland caribou, wolverine, and fisher. Moreover, this alternative would affect the most acres of the South Fork Mountain Roadless Area. For these reasons, this alternative was dropped from further consideration.

East Section 9 with Switchback - this alternative would connect to Stimson Lumber Company lands in Section 9, then cross National Forest land in Section 4. It would require 0.78 miles of road construction on National Forest and 0.07 miles on Stimson Lumber Company property. This alternative would create a larger reduction in Grizzly Bear security habitat, since this proposed route is further from currently open roads. This alternative would require crossing a tributary of Sema Creek at a wide floodplain, which would cause adverse impacts to the watershed and fisheries resources, and would have the potential of affecting sensitive plants. Similar to the Section 9 Alternative which also was considered, the South Fork Mountain Roadless Area also would be affected. For these reasons, this alternative was eliminated from further consideration.

Land Exchange - In this alternative, Stimson Lumber Company would exchange their lands in Section 5, T36N, R45E for Forest Service lands in another location. The Forest Service pursued the possibility of a land exchange with Stimson following the initial request for access. Documentation of discussions regarding a land exchange is included in the project file. However, one of the requirements necessary for the Forest Service to proceed with an exchange was for Stimson to acquire the subsurface rights to the land for which they were offering in trade. Stimson determined that they could not economically purchase these rights in the foreseeable future; therefore, they were no longer interested in pursuing an exchange. Company officials also stated that purchase was not a viable option, and expressed their desire to maintain the company's land and resource base. In addition, with the onset of the Douglas-fir Bark Beetle outbreak, Stimson was also not willing to delay management activities on their land until such time as an exchange could be completed; consequently, this alternative is beyond the scope of this EA.

Purchase of Stimson Land by Forest Service Through the Land and Water Conservation Fund – this alternative was suggested as another way for the Forest Service to acquire the Stimson Lumber Company property. When discussing a land exchange with Stimson Lumber

Company, they noted that they do not wish to decrease their land base; therefore, this alternative was eliminated from further consideration.

Condemnation of Stimson Land for Eminent Domain – Forest Service policy is to use condemnation procedures only when the land or interest in the land is essential for management or protection of National Forest resources and cannot be acquired by negotiation. Stimson Lumber Company has said they are not interested in an exchange, sale, or conservation easement. To determine if the land is essential for management or protection of National Forest resources, the cumulative effects of project implementation were considered for the threatened species of grizzly bear, lynx and bull trout as well as for the roadless area resource. The determination of the effects analysis for grizzly bear, lynx, and bull trout was that planned activities on National Forest and private lands are "not likely to adversely affect" these species or their habitat (see project BA). For the roadless area resource the conclusion of the effects analysis was that as a result of management activities on National Forest and private land, the amount of roadless acreage within the roadless area complex would be reduced by less than 5% (see Chapter III). As a result of the effects analysis, the Forest Service has determined that acquisition of this land is not essential for management or protection of resources; therefore, this alternative was eliminated from further consideration.

Comparison Of Alternatives

Table A. Summary of Significant Issues by Alternative

Issue and Indicator(s)	Alternative A (No-Action)	Alternative B	Alternative C
Effects to Grizzly Bear, Lynx, and their habitat Issue Indicators: 1) Acres of core and security habitat for grizzly bear affected 2) Acres of suitable lynx habitat affected	1) No adverse effects to the grizzly bear or its habitat are expected. 2) No adverse effects to the lynx or its habitat are expected.	1) Forest Service and Total Acres *a) Core habitat affected: 151 and 794 acres, respectively.* *b) Security habitat affected: 139 and 720 acres, respectively.* 2) Forest Service and Total Acres of suitable lynx habitat affected: 6 and 345 acres, respectively, of low quality habitat affected. Implementation of this alternative would not be likely to adversely affect either grizzly bear or lynx.	1) Forest Service and Total Acres *a) Core habitat affected: 127 and 798 acres, respectively.* *b) Security habitat affected: 122 and 722 acres, respectively.* 2) On National Forest about 2 acres of low quality foraging habitat and 1.8 acres of denning habitat would be affected. On private land 345 acres of low quality foraging habitat would be affected. Implementation of this alternative would not be likely to adversely affect either grizzly bear or lynx.

Issue and Indicator(s)	Alternative A (No-Action)	Alternative B	Alternative C
Effects to Aquatic Resources and Bull Trout Issue Indicators: *1) Quantity of sediment delivered to stream* *2) Changes to channel morphology* *3) Amount of riparian vegetation removed* 4) Risk of sediment delivery from roads at stream crossings *5) Number of culverts in fish-bearing streams*	1) No sediment delivered to streams from road construction and/or timber harvest activities. 2) No changes in channel morphology would occur. 3) No riparian vegetation removed. 4) No risk of sediment delivery on National Forest and private land from management activities associated with the proposed action. 5) No culverts to be placed in fish-bearing streams.	1) 1,090 lbs. of sediment predicted to be produced from road construction on National Forest land. 2) Some changes in channel morphology to a first order tributary stream located on National Forest land. No changes in channel morphology to Sema Creek. 3) 375 and 4,500 feet of riparian vegetation removed on National Forest and private land, respectively. 4) On National Forest 4,000 feet of road with 5 stream crossings. On private land 16,000 feet of road and 20 stream crossings. 5) No culverts to be placed in fish-bearing streams on National Forest and 1 culvert on private land. No effect to bull trout expected from activities on National Forest land.	1) 380 lbs. of sediment predicted to be produced from road construction on National Forest land. 2) No changes in channel morphology to tributary streams and Sema Creek. 3) 300 and 4,500 feet of riparian vegetation removed on National Forest and private land, respectively. 4) On National Forest 2,500 feet of road with 4 stream crossings. On private land 16,000 feet of road and 20 stream crossings. 5) No culverts to be placed in fish-bearing streams on National Forest and 1 culvert on private land. No effect to bull trout expected from activities on National Forest land.

Issue and Indicator(s)	Alternative A (No-Action)	Alternative B	Alternative C
Effects to the roadless resource Issue Indicators: 1) Changes to natural integrity, apparent naturalness, remoteness, solitude, and special features 2) Acreage with roadless character within the South Fork Mountain I.R.A and the entire Roadless Area Complex	There would be no change to the existing condition of the roadless resources.	Natural integrity, apparent naturalness, and remoteness would be reduced in the southern portion of the roadless area. There would be other areas and viewpoints, however, where naturalness can still be found. Solitude within the area would be maintained in the long-term. Within Sections 5 and 8 special features would be reduced due to management activities. Management activities in Sections 8 and 5 would result in the acres from both of these sections no longer meeting roadless characteristics. Remaining roadless area, including Section 4 and the inventoried acres of the South Fork Mountain Area, along with the Grassy Top Roadless to the north, would continue to meet roadless area characteristics. Acres: 4,528 in the South Fork IRA and 20,579 acres in the roadless complex.	Natural integrity, apparent naturalness, and remoteness would be reduced along in the southern portion of the roadless area. There will be other areas and viewpoints, however, where naturalness can still be found. Solitude within the area would be maintained in the long-term. Special features would be reduced within Sections 8, 5 and the southwest corner of Section 4. Management activities in Sections 8 and 5 would result in the acres from both of these sections no longer meeting roadless characteristics. A small portion of Section 4 would be affected in the southwest corner, resulting in a small area that would no longer meet roadless character. The remaining roadless area in Section 4 and the inventoried acres of the South Fork Mountain Area, along with the Grassy Top Roadless to the north, would continue to meet roadless area characteristics. Acres: 4,527 acres in South Fork IRA and 20,578 in the roadless complex.

Issue and Indicator(s)	Alternative A (No-Action)	Alternative B	Alternative C
Effects to Threatened, Endangered, and Sensitive and Rare Plants Issue Indicators: *1) Presence of populations* 2) Acres of suitable habitat affected	1) No adverse effects to sensitive plants. 2) No suitable habitat affected.	1) No direct or indirect effects to known populations of sensitive plants; undetected individuals may be impacted. 2) Approximately 0.3 acre of moist forest habitat and 0.1 acre of wet forest habitat would be permanently lost. Moderate cumulative effects overall to sensitive plant species.	1) No direct effects to known populations of sensitive plants; indirect effects could occur to one population of moonworts if easement location cannot be moved. High likelihood that individuals will be impacted. 2) Approximately 1.0 acre of moist forest habitat and 0.1 acre of wet forest habitat would be permanently lost. Moderate cumulative effects overall to sensitive plant species.
Effects to Noxious Weed Invasion and Spread Issue Indicators: *1) Presence and extent of known weed infestations* 2) Acres of habitat susceptible to weed invasion	No effect on weed spread or introduction. Management activities associated with the proposed action would not be implemented.	1) A risk of spread of existing infestations during road construction and use. The risk would be mitigated by requirements to seed/fertilize cut and fill banks and to monitor and treat weeds (see Features Common to All Action Alternatives) 2) Approximately 6 acres would be susceptible to new weed invaders	1) A risk of spread of existing infestations during road construction and use. The risk would be mitigated by requirements to seed/fertilize cut and fill banks and to monitor and treat weeds (see Features Common to All Action Alternatives) 2) Approximately 3 acres would be susceptible to new weed invaders
Effects on Soil Productivity Issue Indicator: Amount of soil on National Forest lands taken out of production	There would be no change in current soil productivity conditions, because management activities associated with the proposed action would not be implemented.	Approximately six acres of National Forest lands would be directly impacted by road construction.	Approximately three acres of National Forest lands would be directly impacted by road construction.

Issue and Indicator(s)	Alternative A (No-Action)	Alternative B	Alternative C
Effects on Recreation Opportunities Issue Indicator: *1) Changes in Recreation Opportunity Spectrum classification*	1) No changes in the Recreation Opportunity Spectrum.	1) No changes in the Recreation Opportunity Spectrum expected as a result of management activities.	1) No changes in the Recreation Opportunity Spectrum expected as a result of management activities.

CHAPTER III - Affected Environment and Environmental Consequences

Introduction

This chapter presents two levels of analysis for each resource issue described: the existing conditions within each resource's affected environment, and the potential effects of the alternatives on each resource. The Affected Environment section provides general information about the resource described and establishes a baseline against which effects of the alternatives may be compared. The Environmental Consequences section discloses the potential direct, indirect, and cumulative effects of the alternatives on each resource.

In this analysis, direct and indirect effects are described for those activities that are proposed to occur on National Forest lands. Cumulative effects consider the effects of past, present and reasonably foreseeable activities of both Federal and non-Federal, in addition to the direct and indirect effect of proposed project activities. Each resource analyzed has a defined cumulative effects analysis area, which may be different for each resource.

Wildlife

Regulatory Framework

The regulatory framework providing direction for the protection and management of wildlife habitat comes from the following principal sources:

- The Endangered species Act of 1973, as amended
- The National Forest Management Act of 1976 (NFMA)
- The Idaho Panhandle National Forests (IPNF) Forest Plan (1987)

Section 7 of the ESA directs federal agencies to ensure that actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat.

The National Forest Management Act (NFMA) provides for balanced consideration of all resources. It requires the Forest Service to plan for diversity of plant and animal communities. The Act also directs the Forest to select Management Indicator Species (MIS) to help assess the impacts of land management decisions on the wildlife resource. The MIS concept assumes that by maintaining viable MIS populations, viable populations of existing and desired species will also be maintained for other wildlife species that have similar habitat requirements.

The Forest Plan, in compliance with NFMA, establishes forest-wide management direction, goals, objectives, standards, and guidelines for the management and protection of wildlife habitat

and species, including old-growth habitat, management indicator species, sensitive species, and threatened and endangered species.

Direction concerning implementation of the ESA and NFMA also can be found in Forest Service Manuals (FSM) and various letters or memoranda from the Washington Office, the Northern Region Office, and the Supervisors Office.

Affected Environment

Habitat Characterizations

Wildlife populations are tied to a mosaic of vegetation patterns that continually shift in response to ecosystem processes and disturbance agents. Without disturbance, such as fire, vegetation follows a predictable sequence of change called succession. As vegetation moves through each sequence of change, wildlife species shift accordingly.

Each species possesses a certain successional strategy. Some species are adapted to early stages of forest succession, while others are more suited to late stages (mature and old-growth forests). Habitat changes result in population increases or decreases, depending on the species. Therefore, wildlife populations and habitats are constant over time.

Forest landscapes periodically experience large and small natural disturbances (e.g. fires) that interrupt this sequence of change and form a base from which habitat is fashioned. Large disturbances can cause dramatic shifts in populations in specific areas; however, populations are maintained throughout their range by these somewhat random disturbances, which keep some areas in each successional stage (Oliver 1992).

Prior to European settlement, human impacts to wildlife habitat were minimal. Wildfires, Native American fires, and insect and disease outbreaks were the major processes affecting habitats in the assessment area. Low-intensity, frequent fires maintained open understories in ponderosa pine and drier Douglas-fir habitats. According to the North Zone Geographic Assessments (USDA draft in progress) western white pine, ponderosa pine and western larch forests were historically more abundant than today. They provided important habitat for cavity-nesting birds, bats, bears, and other wildlife that use large snags and downed logs. In contrast, medium to large and mature trees were less abundant historically. The number of acres of shrub, seed, sapling, and small pole stands were similar to current conditions.

Old and Mature Forests

Many wildlife species occurring on the IPNF prefer or only occur in mature and old-growth forests. Mature and old forests are likelier than younger forests to provide habitat for species that prefer large trees, structural and biological diversity and closed canopies and/or depend on snags or downed logs for nesting, foraging or raising their young. Current structurally immature stands (i.e. young forests) could provide old-growth habitat over time if not disturbed or if managed to maintain large, old, diseased and dead structural components within levels needed to provide suitable habitat.

Old-growth and mature forest stands have been reduced in amount and patch size across the IPNF. The Columbia Basin Assessment lists species considered at risk associated with natural structural conditions of old and mature forests (e.g. such as open-grown ponderosa pine). Some of these include the flammulated owl, boreal owl, Vaux's swift and Lewis' woodpecker. Most Forest Service sensitive species are associated with late-successional habitats or with habitats and cover types in short supply, such as cottonwood communities.

Dry Forest Habitats

Dry forest habitats have evolved with frequent (every 20-35 years), low-intensity ground fires. To protect human developments and future timber resources, fires have been suppressed over the past century. This practice has allowed smaller shade-tolerant trees to become established under the canopy of the dry site species such as ponderosa pine. Thus, the structure of what was traditionally open-grown forest has become dense multi-canopied forest with more tree species diversity and greatly increased crown fire hazard.

Some wildlife species prefer open, dry forests with large trees. Examples include flammulated owls, pygmy nuthatches, white-headed woodpeckers, western bluebirds and Lewis' woodpeckers. Forests that have developed a dense understory of grand fir or other shade-tolerant conifers are no longer suitable for these birds. Some species, including northern goshawk and flammulated owls, prefer gentle slopes to steeper sites in these dry forest habitats.

Snags and Dead, Downed Woody Habitat

Over 40 wildlife species depend on snags (dead trees) for their forage or cover, or for a place to raise their young. Several sensitive species nest in snags, including boreal owl, flammulated owl and black-backed woodpecker. Black-backed woodpeckers also feed on insects in snags. Snags provide den sites for fishers and other mammals, and roosts for several species of bats and owls. Large diameter snags provide habitat for the greatest variety of cavity users and remain standing longer than smaller snags.

Not all species of snags are used by all snag-dependent wildlife species, and some tree species appear to be more important than others. Ponderosa pine, larch, and cedar are favored by snag-dependent species and tend to last longer than other species. In one study in northwestern Montana, cavity nesters clearly preferred western larch even though Douglas-fir was five times more abundant (McClelland et al. 1979, p. 480). Such species as grand fir, hemlock, and Douglas-fir decay more rapidly after they die and fall to the forest floor. Many birds that nest in snags promote forest health by controlling forest insect pests.

After snags fall and become logs on the forest floor, they are still important to many wildlife species. They serve as travel corridors and as cover for rodents and other mammals, reptiles and amphibians. Hollow logs are used as den sites by many species. Lynx, American marten, turkey, and snowshoe hare favor habitats that have abundant downed logs. Living trees with decay, hollow trees and mistletoe-broomed trees are also important to many wildlife species.

For snag-dependent species associated with old-growth, snags are less abundant than historically. Timber harvesting and firewood gathering are common activities in the forest. Timber harvesting typically removes the dying, diseased, and dead trees, so most stands have fewer snags and dying/diseased trees after a timber sale. Snags also are often felled during forest management activities because they may pose a safety threat to woods workers. Salvage logging after fires also has removed snags from the landscape.

Firewood gathering has also affected the number of dead trees. Snags and downed logs are preferred over live trees by many people who cut firewood, and corridors along open roads have few snags. Once large snags are removed, it may take a hundred years for a regenerated stand to grow new trees and produce snags large enough to meet the needs of most snag-dependent wildlife species.

Wildlife Security

Before European settlement, Native Americans lived and traveled mainly in the major river bottomlands. Human developments and disturbance outside these bottomlands were minimal. Historically, most of the National Forest lands were considered safe sanctuaries or retreats for wildlife that moved freely across the landscape.

Recreation, mining, timber management and other human developments have led to an increase in the number of roads providing human access to previously secure habitats. As roads were built and areas were opened to motorized traffic and other disturbances, wildlife was displacement from otherwise suitable habitat, and mortality increased from hunting, trapping, and accidents with vehicles.

Wildlife Populations

Species associated with mature and old forest structure or large snags, or species sensitive to human disturbance were likely more abundant historically across the IPNF. The gray wolf, woodland caribou, bald eagle grizzly bear and Canada lynx, which occur on the Priest Lake Ranger District, are listed as threatened or endangered by the USFWS. The peregrine falcon was removed from the list of threatened and endangered species in July 1999; this species, however, is still considered important to public land management. All of these species have been restricted in population and distribution and occur in only portions of their former ranges.

Human developments, habitat loss and fragmentation, and disturbance have affected the abundance and distribution of wildlife species that are hunted and trapped, as well as wide-ranging species. The effect of increased human activity in previously secure habitats is discussed above. In addition, forest management has altered the distribution of forest structural stages, with a resulting change in the amount and distribution of suitable habitat. These factors have affected the population numbers and distribution of species that require or occur in these habitats.

Some populations are artificially controlled by humans. The Washington Department of Fish and Wildlife and Idaho Department of Fish and Game (IDFG) have transplanted elk, woodland caribou, turkeys, and mountain goats to augment low populations and increase distribution.

Unlike carnivores, big game species such as deer, elk and moose are more abundant now than historically due in large part to continued creation of early succession foraging habitats through timber harvests and IDFG population management strategies.

Species Relevancy Screen

Threatened, Endangered and Sensitive (including proposed species) and other Management Indicator Species (MIS) that are known to occur on the Priest Lake Ranger District were screened for their relevancy to the project by reviewing sighting records, survey records, planning documents and other sources. Relevancy was determined if there is evidence of species or habitat present within the affected area, and whether any such species or habitat could potentially be affected by the proposed actions.

No further discussion and analysis is necessary for species or habitat determined not to be present within the affected area. The rationale for no further analysis for these species is provided in the project file.

Supporting rationale also is presented for those species that are determined present but not necessarily affected by the scope of proposed actions, or where the effects could be mitigated through design criteria. These species are discussed as part of the Affected Environment, but are not evaluated in an effects analysis.

Species considered present and potentially affected by the proposed actions are discussed in both the Affected Environment and Environmental Consequences sections. Table 1 summarizes the analysis status of wildlife species occurring on Priest Lake Ranger District.

The species relevancy screen indicated that, of threatened and endangered (and proposed) species that may be found on the Priest Lake Ranger District, the grizzly bear, Canada lynx, gray wolf and woodland caribou might potentially be impacted by proposed activities. The only sensitive species considered relevant to the project are the black-backed woodpecker, fisher, wolverine, northern bog lemming, and boreal toad. Relevant other species include moose and forestland birds.

Discussion of the relevant species' habitat preferences and requirements are based on scientific literature, site-specific information from District wildlife atlases and field surveys, and professional judgment. The environmental baseline and relevant habitat components that may or may not be affected by the alternatives are also discussed.

The difference between capable habitat and suitable habitat is an important concept in a discussion of existing conditions for wildlife. The following definitions distinguish between these two terms:

- **Capable habitat** refers to the inherent potential of a site to produce the essential habitat requirements of a species. Vegetation on the site may not be currently suitable for a given species because of variable stand attributes such as inappropriate seral stage, cover type or stand density.

Table 1. Species occurring on the Priest Lake Ranger District and analysis status.

Status	Species	Species/Habitat Present	Species/Habitat Measurably Affected	Species Further Analyzed
Endangered				
	Northern Gray Wolf	*Yes*	*No*	*No*
	Woodland Caribou	*Yes*	*No*	*No*
Threatened				
	Grizzly Bear	*Yes*	*Yes*	*Yes*
	Canada Lynx	*Yes*	*Yes*	*Yes*
	Bald Eagle	*No*	*No*	*No*
Sensitive				
birds	*Black-backed Woodpecker*	*Yes*	*No*	*No*
	White-headed Woodpecker	*No*	*No*	*No*
	Flammulated Owl	*No*	*No*	*No*
	Northern Goshawk	*No*	*No*	*No*
	Peregrine Falcon	*No*	*No*	*No*
	Harlequin Duck	*No*	*No*	*No*
	Common Loon	*No*	*No*	*No*
amphibians	*Coeur d'Alene Salamander*	*No*	*No*	*No*
	Boreal Toad	*Yes*	*No*	*No*
	Northern Leopard Frog	*No*	*No*	*No*
mammals	*Northern Bog Lemming*	*Yes*	*No*	*No*
	Fisher	*Yes*	*No*	*No*
	Wolverine	*Yes*	*No*	*No*
	Townsend's Big-eared Bat	*No*	*No*	*No*
Other				
	Pileated Woodpecker	*No*	*No*	*No*
	American Marten	*Yes*	*No*	*No*
	Moose	*Yes*	*No*	*No*
	White-tail Deer	*No*	*No*	*No*
	Forest Land Birds	*Yes*	*No*	*No*

- **Suitable habitat** currently has both the fixed and variable stand attributes for a given species' habitat requirements. Variable attributes change over time and may include seral stage, cover type, stand density, tree size, stand age or stand condition.

Endangered Species

*Northern Gray Wolf (*Canis lupus*)*

The gray wolf was listed as endangered in the lower 48 states in 1978 (Hansen 1986, p.1). Currently, the gray wolf is listed federally as an endangered species north of Interstate 90 and as an experimental population south of Interstate 90. The first Northern Rocky Mountain Wolf Recovery Plan was developed by an interagency team in 1980. A revision of the recovery plan was approved in 1987, after extensive review and evaluation.

Wolves are large carnivores belonging to the dog family (Canidae). Wolves generally occur in low densities, are shy, and have large home ranges. Wolves in western North America rely heavily on ungulate species (big game) as a primary prey item, although other prey species such as hares or small animals may be utilized (Reel et al. 1989, p. 2). Wolves are commonly associated with areas where big game is abundant and often follow big game populations onto wintering areas. Wolves generally form packs consisting of several individuals. Dispersing wolves are sometimes found in outlying areas that are claimed as part of territories by existing packs.

Wolf mortality associated with human/wolf interactions is considered one of the primary limiting factors in the recovery of wolf populations (USDI 1987, p.9). The risk of mortality for wolves is strongly correlated with increasing levels of human access (Frederick 1991**,** p. 36). Misidentifications of wolves by coyote hunters, deliberate killing and non-target mortality associated with coyote eradication efforts are known to affect wolf numbers and are associated with increased levels of human access into areas that wolves occupy.

Environmental Baseline: Reported sightings and evidence of gray wolves within the Priest River sub basin and surrounding areas are increasing. Direct observations and observation of wolf sign have occurred within and adjacent to the project area regularly since 1991. Four observations considered as possible were reported 9 miles southwest of the project area between October and November of 1996. A sighting considered as possible was reported in July of 1997, four miles northeast of the project area. In August of 1998, probable wolf sign (scat) was located one mile south of the project area. The evidence over the last five years indicates single animals or possibly groups of animals traveling together but does not yet imply pack establishment within the drainage.

Rationale for No Further Analysis: Increased access will raise the potential for human use and the potential for human/wolf encounters. Public access to new roads would be restricted. Although wolf use of the area is known, that use is of low density and infrequent nature. The probability of a wolf/human encounter would remain low.

Proposed activities on Federal or private lands would have little impact on big game populations; thus, the potential impact on wolf would be minor. It is anticipated that the proposed activities may cause displacement and a slight increase in mortality risk if wolves are present. These factors would not be likely to adversely affect wolf populations or wolf habitat.

Woodland Caribou (Rangifer tarandus caribou)

In the lower 48 states, the woodland caribou was first emergency listed as an endangered species in 1983 under the Endangered Species Act. The initial recovery plan was completed in 1985 and revised in 1995. Federal and State agencies and the government of British Columbia have been working toward recovery of the caribou.

As part of the recovery plan, caribou have been augmented into the ecosystem from source populations in British Columbia since 1987. By 1990, the population had grown to 55-70 animals. The population remained somewhat stable through the early 1990s, but a decline in numbers occurred in 1996. The decline was considered the result of an increased rate of predation and other factors. Caribou numbers may vary annually, and they have been regularly monitored with annual census and tracking of radio-collared animals.

The population is generally found above 3,000 feet in the Selkirk Mountains, in Engelmann spruce/subalpine fir and western red cedar/western hemlock forest types. They are highly adapted to boreal forests and do not make extensive use of drier low elevation habitats. Seasonal movements are complex in this population and ecotype and normally occur as altitudinal patterns and seasonal movement to traditional sites. The population is threatened by habitat fragmentation and loss and by excessive mortality from predation and illegal human take (USDI 1993).

Environmental Baseline: The project area is located approximately 1.5 miles south of the Selkirk Mountain Caribou Recovery Area. Caribou use of the area immediately surrounding the project area is considered as unexpected, although caribou have recently been documented utilizing habitats within and adjacent to the project area. Caribou use o within and adjacent to the project area was documented in 1988, 1996 and 1997. Direct observations were made in 1988 and 1996, and physical evidence was used to determine caribou use in 1997. Caribou habitat in the project area is not considered high quality because of the overall low elevation and generally young forest age.

Rationale for No Further Analysis: The project area is outside of the designated caribou recovery area and is not deemed critical to the species' recovery in the Selkirk Mountains. No habitat identified as necessary for their recovery would be impacted. Caribou have a recent history of utilization of the area and may on rare occasions use the area in the future. Therefore, the proposed activities may displace caribou and cause a slight increase in the risk of mortality. These factors would not be likely to adversely affect the caribou population or caribou habitat.

Threatened Species

Grizzly Bear (Ursus arctos horribilis)

The grizzly bear was listed as threatened in 1975. In 1982, the Selkirk Mountains were identified as a grizzly bear recovery area. The grizzly bear was originally distributed in various habitats throughout western North America. Today, it is confined to less than two percent of its original range, represented in four or five population centers south of Canada. These populations occur in what are identified as grizzly bear ecosystems. The Selkirk Mountains ecosystem of northeastern Washington, northern Idaho, and southeastern British Columbia is considered one of these grizzly bear ecosystems.

Grizzly bears are habitat generalists in that they may be found over a variety of habitats and habitat conditions. Certain types of habitats are utilized proportionally more than others, such as wet meadows in the spring, riparian areas year-round, and berry fields in the summer.

Grizzly bears are generally shy in nature and tend to avoid human contact with the exception of early spring. During this time, bears may sometimes compromise their shy nature or natural avoidance of humans because of the high nutritional demands that they experience following the winter denning period. This is especially true for females with cubs, which have a higher nutritional demand.

Controlling/directing motorized access has been one of the most important tools in managing for grizzly bear recovery. By managing motorized access, certain objectives can be achieved, including a reduction in human interactions, in potential grizzly bear mortality, in displacement from important habitats and in habituation to humans.

The existing direction for grizzly bear habitat management is based on a minimum of 70 square miles of security habitat or other established threshold within each grizzly bear management unit. The 70 square mile management standard used was developed from information outlined in the Cumulative Effects Analysis process by Christensen (1982). This process was adopted by the Idaho Panhandle National Forests during development of the Forest Plan (USDA 1987, Appendix U).

The process is based on data on the mean home range of 13 adult female grizzly bears greater than five years of age. The average home range was determined to be approximately 100 square miles in size. This Grizzly Bear Management Unit was thought to represent a viable home range that would spatially meet the needs of a resident female grizzly bear.

The identification of a suitable smaller area within the bear unit that would minimally meet the spatial and other needs of an adult female grizzly bear would define the lower limit of a viable home range. This lower limit was established at 70 square miles, based on the average home range size for six adult females in the North Fork Flathead drainage in Montana and on professional judgment. The average home range for adult females in the Northern Continental Divide Ecosystem was 72 square miles. Minimum security habitat standards for the Kalispell-

Granite Grizzly Bear Management Unit were established at 70 percent of the GBMU (USDA 1995). In 1998, the Selkirk/Cabinet-Yaak subcommittee, at the request of the Interagency Grizzly Bear Committee, developed an interim access management strategy to address impacts related to motorized access until Forest Plans are revised. This strategy includes achieving specified levels of security (habitat effectiveness) and core habitat, depending upon priorities of Bear Management Units (BMUs). The following management standards for grizzly bear apply:

- A minimum of 70 percent security habitat would be maintained within the Kalispell-Granite grizzly bear management unit (USDA 1995).

- Open road densities of 1 mi/mi^2 would not exceed more than 33 percent of the grizzly bear management unit. Roads considered as open roads are those without restrictions on motorized vehicle use. (Holt personal communication 2001)

- Total road densities of 2 mi/mi^2 would not exceed more than 26 percent of the grizzly bear management unit. Total road densities include all open roads, restricted access roads, barriered roads and impassable roads. (Holt pers. comm. 2001)

- There would be no net loss in core habitat for grizzly bears. Core habitat is defined as an area of high quality habitat that contains no motorized travel routes or high use trails (IGBC Interim Access Management Rule Set 1998).

Environmental Baseline: The management of security habitat is perhaps one of the most important aspects of management for grizzly bears (Kasworm and Manley 1989). Security habitat allows sufficient space for grizzly bears to roam and allows for effective use of available habitat. By definition, security habitat is an area or space outside or beyond the influence of high levels of human activity. Open roads, timber harvest and high-use recreational features such as trails or camps are considered to cause displacement of bears and a reduction in the amount of available security habitat.

The project area is located within the Kalispell Granite Grizzly Bear Management Unit (figure 4). The Kalispell-Granite BMU totals 85,640 acres and is one of nine designated grizzly bear management units in the Selkirk Recovery Area. (USFWS 1973). Grizzly bear habitat security in this BMU is achieved through road restrictions on 27 road systems. Four of the 27 road systems have restrictions that are implemented only seasonally. Within this BMU, habitat effectiveness is currently maintained at 78.5 percent during the spring season (March 15 - June 30), at 72.4 percent during the summer season (July 1 - September 10), and at 78.5 percent during the fall season (September 11- November 15).

Numerous observations of grizzly bear and grizzly bear sign have been reported in the Kalispell-Granite Grizzly Bear Management Unit since the 1970s. Between 1985 and 198, a radio-collared male grizzly bear had a home range that overlapped the project area. Sightings of grizzly bears have been routinely reported within the BMU, the most recent an observation of a female and two cubs nine miles northeast of the proposed access in September of 2000.

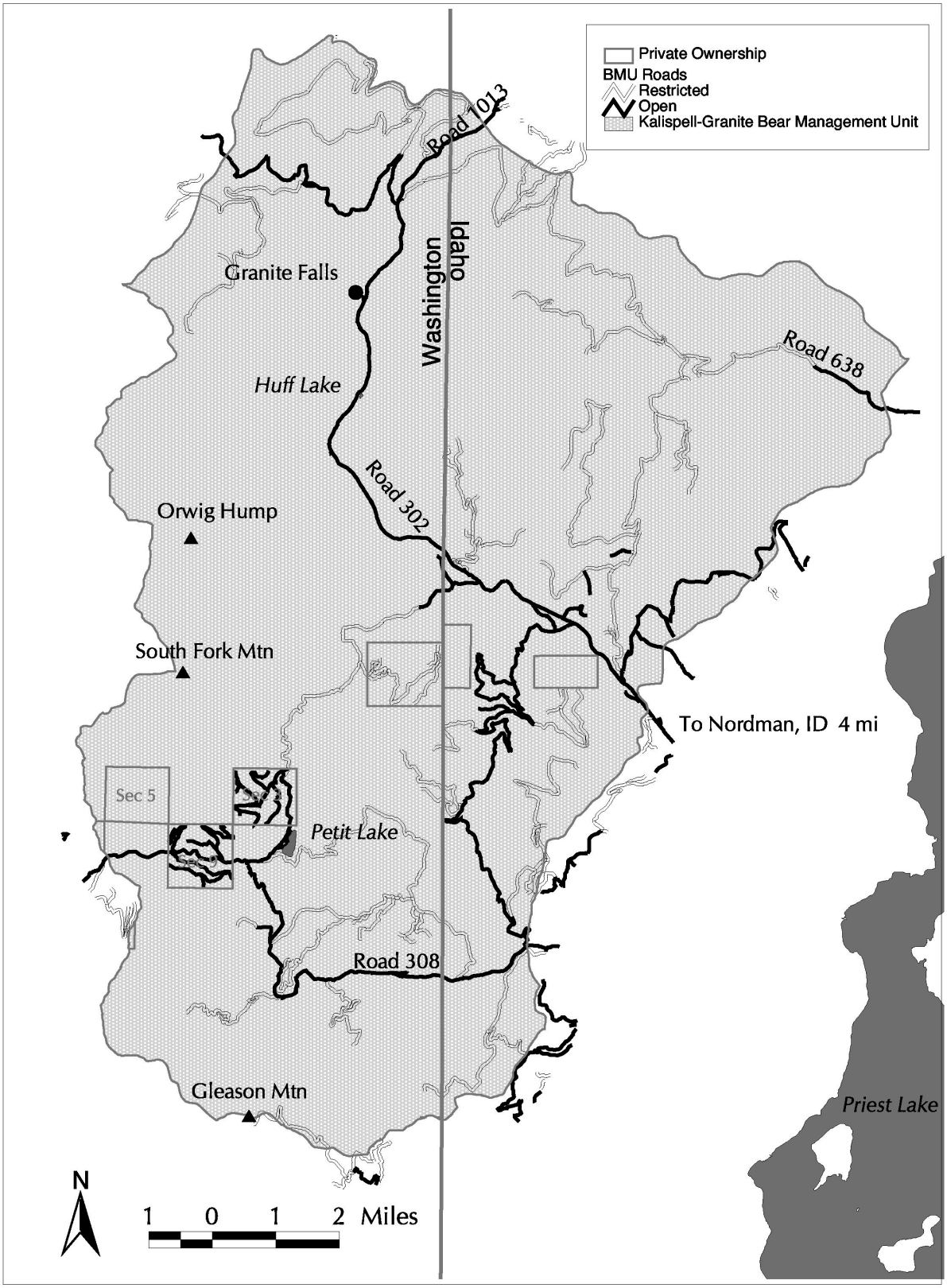

Figure 4. Kalispell-Granite Grizzly Bear Management Unit.

Grizzly bear habitats in project area consist of a mosaic of closed timber, wetland meadow complexes, open timber/shrubfields and rock/scree habitats. The majority of the project area is in a closed timbered condition from a fire that swept through the area in 1926. Wetland habitats dominated by *Sphagnum* species and *Carex* species occur in lowlands along Sema Creek and Tobasco Creek; these areas are considered high quality spring habitats for grizzly bears. Other high quality spring habitats occur in open timber and in riparian areas.

High quality summer habitats are found in lesser quantities than elsewhere in the Kalispell-Granite Grizzly Bear Management Unit and occur primarily where timber management activities have opened the overstory canopy and where the regeneration or the establishment of a shrub-dominated understory has occurred. Closed timber habitats generally preferred by grizzly bears in the fall are generally more abundant and evenly distributed in the project area and BMU.

Core area habitat has been identified as areas free of motorized access during the non-denning period. These areas are an important component for adult female grizzly bears that have successfully reared and weaned offspring (IGBC 1994). Research conducted on four female bears in the Selkirk ecosystem showed a selection for core over non-core habitat by three of the four bears and a significant selection for core habitat by two of the female bears (Wakkinen and Kasworm 1996). Grizzly bear core habitat was identified as areas greater than 0.31 mile from any road or trail that received motorized use during the non-denning period. In addition, areas within 0.125 mile of trails that are considered as 'high use' are not considered as providing grizzly bear core habitat.

Within the Kalispell-Granite Grizzly Bear Management Unit, 44,480 acres (52.6 percent of the GBMU) have been identified and mapped as meeting the requirements of grizzly bear core habitat as currently defined. Core habitat occurs in approximately 20 locations in the bear management unit, with the majority in blocks greater than four square miles in size. Of this, 1,214 acres of core habitat were created between 1995 and 1998 when this GBMU was established. The 1995 closure of Forest roads 1122A, 1122B, 1122C, and 401C by ripping or earthen barriers contributed to the amount of available core habitat. In 1997, the obliteration of Forest road 638C further increased the amount of available core habitat. In 1998, the obliteration of Forest roads 319 and 1104 increased core habitat by 2,023 acres.

Because of the potential for the proposed activities to negatively affect grizzly bear recovery in the Kalispell-Granite BMU, this species is further discussed in Environmental Consequences.

*Canada Lynx (*Lynx canadensis*)*

On July 8, 1998, the U. S. Fish and Wildlife Service published a proposal to list the lynx under the Endangered Species Act. On March 21, 1999, the U. S. Fish and Wildlife made the decision to formally list the species. The formal listing as a threatened species was published in the Federal Register on March 24, 2000.

Lynx occupy regions in North America of arctic or boreal influence. They are found from western Alaska to the eastern edge of Newfoundland. The northern boundary of this range coincides with the northern extension of the boreal forests. The southern boundary of lynx range is along the high elevation or boreal forested areas of the Cascades and Rocky Mountains into

Washington, Idaho, Montana, Wyoming, Colorado, and Utah. In the northwest, they are restricted to forested habitats.

The lynx is one of three species of wild cats that occur in the temperate forests of North America. Lynx are relatively common throughout forested areas of Alaska and Canada, although intensive trapping in the past has eliminated or reduced populations in localized areas. The conservation of lynx populations is of greatest concern in the western mountains of the conterminous United States, at the southern periphery of the species' range.

Lynx generally occur in low densities. Their home range averages 24 square miles, depending on prey abundance. On the Priest Lake Ranger District, lynx occur primarily in moist, cold habitat types above 3,000 feet (Weaver personal communication 1998). Although lower elevation forests can be important in some instances, evidence suggests that lynx use them less because of competition with other predators and overheating in the summer.

Important factors that can affect lynx populations include high open road densities and alterations to foraging and denning habitat. According to the Canada Lynx Conservation Assessment and Strategy (pp. 2-13), roads are directly correlated with human access, and consequently with lynx vulnerability to trapping and shooting, especially during the winter season (USDA and USDI 2000).

Lynx habitat in the western mountains consists primarily of two structurally different forest types occurring at opposite ends of the stand age gradient (Koehler and Aubry 1994, p.86). Lynx require early-successional forests that contain high numbers of prey (especially snowshoe hare) for foraging and late-successional forests that contain cover for kittens (especially deadfalls) and for denning. Mid-successional stages may serve as travel cover for lynx but function primarily to provide connectivity within a forest landscape. Like most wild cats, lynx require cover for security and stalking prey; they avoid large open areas. Although lynx may cross openings less than 100 meters in width, they do not hunt in these areas (ibid p. 88).

The Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) and Conservation Agreement #00-MU-11015600-013 (USDA and USDI 2000) outline the management guidelines and standards for identified lynx habitat. This conservation strategy was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands within the United States (Ruediger et al. 2000). The following management standards for lynx apply to the project area:

- Within lynx habitat, no more than 30 percent of that habitat can be in an unsuitable habitat condition at any time. Management activities must not change more than 15 percent of lynx habitat into an unsuitable condition within a 10-year period.

- Within lynx habitat, denning habitat must be maintained on at least 10 percent of the lynx analysis unit. Denning habitat should be well-distributed and in patches larger than 5 acres.

- Manage for no net increase in open road miles in lynx habitat on federal lands. Allow no net increase of regularly used or groomed over-the-snow routes and play areas on federal lands.

- Vegetation structure must be maintained to facilitate movement of lynx along important corridors (e.g. riparian areas, saddles, ridges).

Environmental Baseline: The project area is located entirely within the Sema Lynx Analysis Unit (LAU; figure 5). District wildlife observation records indicate 11 lynx observations within or near the Sema LAU; five reports have been received in the last decade. Surveys to detect presence or absence of lynx were conducted across the Priest Lake District in 1998 and 1999 using the 'hair-snare method'. In 1999, a survey benchmark included a portion of the Seam lynx analysis unit. DNA analysis of the survey information from this effort has not been completed, although visual inspection of hair indicated that lynx presence was likely detected at some of the survey stations.

The LAU was delineated to approximate the average home range of a male lynx and is used to display cumulative impact to habitat conditions of proposed management actions on the species. The Sema LAU is 25,239 acres in size and includes a mixture of foraging, denning, and currently unsuitable habitats. Foraging habitat is generally associated with either early successional or mature and old growth forests that have a relatively open overstory. Denning habitat conversely is associated with mature and old growth forests with a closed canopy; these habitats are thought to be important for lynx denning because of the inherently higher amount of downed wood on the forest floor. Unsuitable lynx habitat occurs where recent wildfires or regeneration-type harvests removed overstory cover. These areas will not become suitable habitat until the sapling-sized trees reach approximately six feet above mid-winter snow depths.

Open and total road densities within this LAU are relatively low and pose a low risk of mortality for lynx. There are 16.3 miles of open road in the LAU and an open road density of 0.4 mi/mi^2. The total for all roads in the LAU, including open and restricted access roads, is 42.1 miles or 1.1 mi/mi^2.

Table 2. Composition of lynx habitat components in the Sema Lynx Analysis Unit (LAU).

Habitat Attribute	Acres in LAU	Percentage of LAU
Low Quality Forage Habitat	13,924	56%
High Quality Early Successional Forage Habitats	1,671	6%
High Quality Late Successional Forage Habitats	521	2%
Denning Habitat	5,982	24%
Unsuitable Habitat	3,065	12%

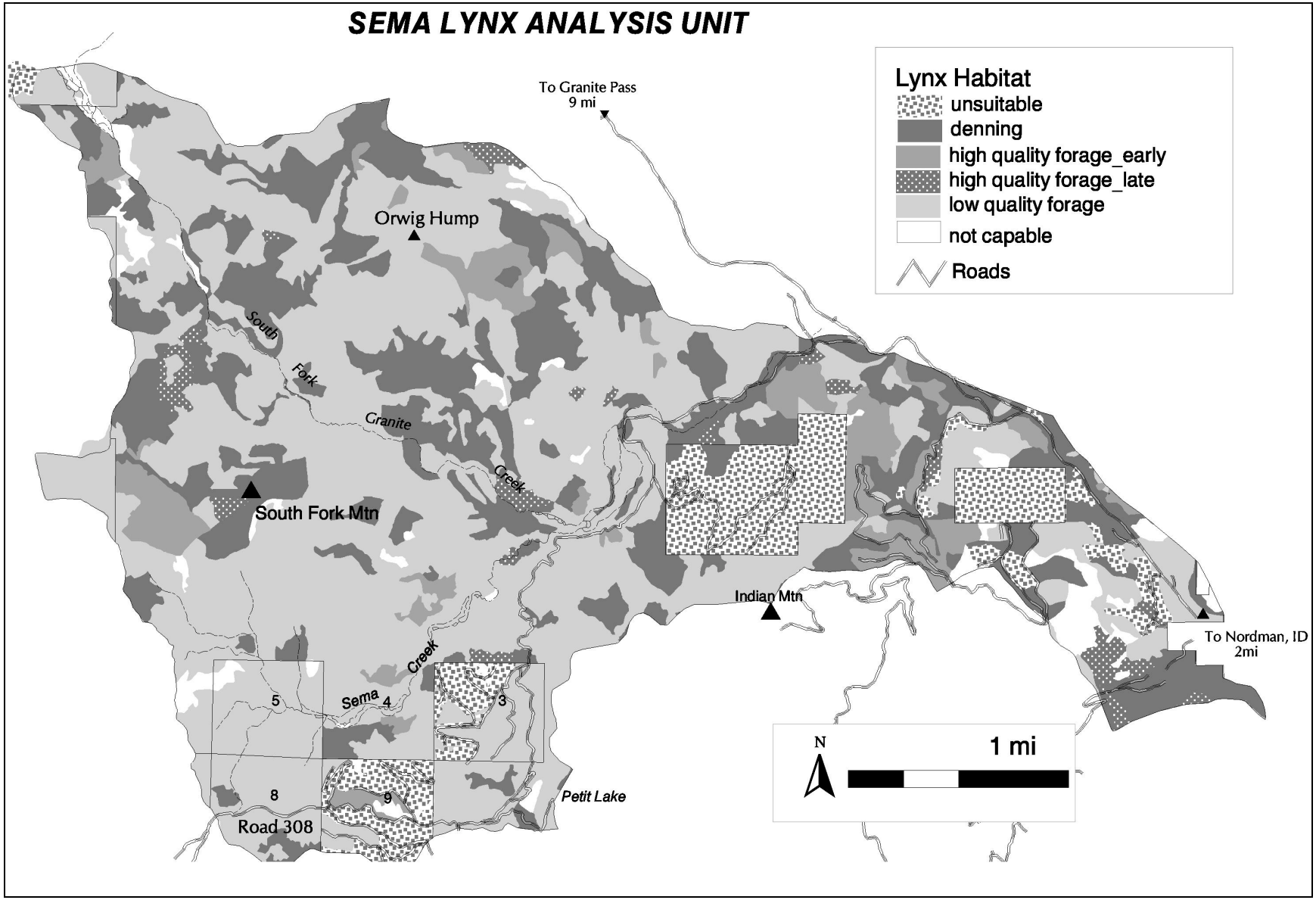

Figure 5. Sema Creek Lynx Analysis Unit.

Lynx Habitat Terminology

Unsuitable habitat - Unsuitable habitat for lynx can be either management-created or naturally occurring. Management-created unsuitable areas in identified/mapped lynx habitat are in early successional stages from recent fires or vegetation management; in these areas, vegetation has not developed sufficiently to support snowshoe hare populations during all seasons. Management-created openings include clearcut and seed tree harvest units and might include shelterwood and commercially-thinned stands, depending on unit sizes and remaining stand composition and structure. Naturally- occurring unsuitable areas include lakes, low-elevation ponderosa pine forests and alpine tundra. These areas do not support snowshoe hare populations and, therefore, are not considered as capable of providing lynx habitat.

Foraging habitat - Foraging habitat supports primary prey (snowshoe hare) and/or important alternate prey (especially red squirrels) that are available to lynx.

Denning Habitat - Denning habitat is used during parturitition and rearing of young until they are mobile. The common component appears to be large amounts of coarse woody debris (either downed logs or root wads). Coarse woody debris provides escape and thermal cover for kittens.

Because of the potential for the proposed activities to negatively affect Canada lynx and habitat conditions in the Sema LAU, this species is further discussed in Environmental Consequences.

Sensitive Species

*Black-Backed Woodpecker (*Picoides arcticus*)*

Black-backed woodpeckers are uncommon year-round residents of coniferous forests, where they naturally occur at low population levels. They experience local population increases and temporary range extensions resulting from fire and other events or activities that increase populations of wood-boring insects.

The geographic range of the black-backed woodpecker extends south from Alaska to central California and Nevada and throughout most of the northern United States. Black-backed woodpeckers nest in snags or in live trees with heartrot that are at least 5 inches in diameter. Most nest trees are 10 inches in diameter or greater (Mariani et al. 1994, p.3). They often use clumps of snags for nesting, and are known to nest in spruce, lodgepole pine, aspen, ponderosa pine, Douglas-fir, and western larch (Thomas 1979, p.381; Harris 1982, pp. 52, 53, & 60). Black-backed woodpeckers feed primarily on wood-boring beetles and specialize on large areas of burned forests or recently killed, beetle-infested timber (Wright and Wales 1993, p.1). Local movements of black-backed woodpeckers occur resulting in small concentrations in response to local temporary abundance of food. Breeding densities of black-backed woodpeckers vary considerably in response to prey availability, increasing up to seven times the normal level during beetle epidemics (Jackman 1975, p.101).

Environmental Baseline: Black-backed woodpeckers are suspected to occur in the project area and are likely associated with endemic levels of tree boring insects and timber mortality. Snag

habitat in the project area has been strongly influenced by vegetation succession and natural fire events. Following a natural fire event, snag habitat may initially be more abundant; through time, as snags decay and fall, snag numbers may decrease. The fires that occurred in 1926 had a strong influence on snag habitat both in overall abundance and in quality. Quality refers to the size, age and species of a snag. The influence of firewood cutting has had a minimal impact in overall snag densities and availability within the Sema Creek drainage.

Black-backed woodpeckers have frequently been located in the Kalispell Basin immediately south of the project area. This species is apparently drawn to insect infestations and associated timber mortality from the planting of poorly adapted tree species following wildfires in the 1930s and 1940s.

Rationale for No Further Analysis: The potential impacts of implementation of either action alternative on populations of black-backed woodpeckers are anticipated be minimal. Only a slight reduction in snag habitat would occur (six acres in alternative B or 3.8 acres in alternative C). The difference between the two alternatives is considered minor or undetectable. As the proposed road systems in either alternative would be restricted to access, no impacts from future firewood cutting would be expected. Wildlife tree retention guidelines directed by the Washington Forest Practices Act (2000 RCW 76.09) would be implemented during activities on Stimson Lumber Company lands and would mitigate losses in snag habitat on those lands. Based on this information, it is concluded that project activities would have little impact on black-backed woodpeckers and would not result in reduced viability or the need for federal listing. This species will not be discussed in Environmental Consequences.

*Boreal Toad (*Bufo boreas*)*

No historic information on amphibians is known for the area. However, this species and several other amphibians are widely reported to be declining worldwide. The decline may be due to several factors. Historically, wetlands were much more abundant. Mortality is certainly much higher than historically because of roads and other factors. Disease or some other widespread agent also is suspected in some declining populations. The boreal toad and the northern leopard frog were added to the Region One Sensitive Species list in March 1999.

Boreal toads require shallow water in ponds, lakes or slow-moving streams for breeding sites. They lay their eggs in the warmest water available, typically less than 20 inches deep (Corkran and Thomas 1996, p.86). Beaver ponds are often used for breeding. This species does not require much aquatic or emergent vegetation in its breeding habitat.

After the brief spring breeding season, adult toads leave aquatic habitats and travel to a variety of upland habitats. Radio telemetry research on boreal toads in southern Idaho found that toads can travel up to 2.5 kilometers (about 1 mile) from their natal ponds; it also showed that toads avoided crossing clearcut or other openings (Bartelt and Peterson 1994, p.2). Boreal toads in Colorado have been documented traveling up to 2.5 miles (Loeffler 1998, p.7).

Movement among seasonal habitats is believed to be important for toads. Tadpoles take at least two months to develop into juveniles and disperse from the breeding site into nearby upland habitats. Juveniles disperse from their natal ponds in late summer. The timing of dispersal

depends on water temperature; in warmer water, tadpoles and juveniles mature faster. Roads are the biggest potential barriers to toad movements. Steep road cuts can hinder toad movements between seasonal habitats. Juvenile toads are vulnerable to mortality by motorized vehicles during dispersal from their natal ponds.

For much of the year, toads live away from ponds in terrestrial forest and non-forest habitats. According to Nussbaum et al. (1983, p. 128), optimal habitat probably has moderate to dense undergrowth in regions that are more humid. Toads hibernate in the winter in habitats that maintain a high humidity and above-freezing temperatures.

Environmental Baseline: Survey results and incidental observations indicate that this species is found throughout much of the Priest Lake Ranger District and is anticipated to occur within the project area. The mesic nature of much of the forests of the IPNF indicate that toads have many opportunities to find persistent small water sources for breeding, and could successfully disperse through moist forests. Based on habitat needs as described in the literature, a very high percentage of the North Zone, including private land, is suitable habitat.

Rationale for No Further Analysis: The Inland Native Fish Strategy (INFS) guidelines concerning riparian habitat conservation areas (RHCAs) for wetlands and riparian areas would limit sedimentation in toad breeding habitat. Design features of the action alternatives would protect most potential breeding habitat, although this species breeds along roadside ditches that do not have any special protection. Some mortality may occur to adults and sub-adults, but effects to the population would not be significant because of the amount of breeding habitat available elsewhere in the drainage. Implementation of either action alternative would not result in reduced viability or the need for federal listing. Therefore, no further analysis of boreal toads is necessary.

*Northern Bog Lemming (*Synaptomes borealis*)*

The northern bog lemming is closely related to voles and meadow mice. This species belongs to one of four genera of true lemmings. The geographic range of the northern bog lemming extends from southern Alaska throughout most of Canada and into northern Washington, Idaho and Montana.

Northern bog lemmings typically inhabit sphagnum peatlands but occasionally occur in mossy forests, wet subalpine meadows, and alpine tundra (Reichel and Beckstrom 1993, p. 1). On the Priest Lake Ranger district, habitat for the species also occurs in some moist cedar/hemlock forests. The species occurs in a restricted habitat that is very limited in the contiguous United States. While its habitat supports several other wildlife species, most sensitive or unique species associated with that habitat are plants. Because of its rarity and relatively small size, northern bog lemming habitat may be easily destroyed.

On the Priest Lake Ranger District, northern bog lemming populations have been documented in Bunchgrass Meadows, Sema Meadows, Gold Creek, and in moist forest near Distillery Bay. According to the most current research in Montana, sphagnum mats are the most likely sites in which to find new bog lemming populations (Reichel and Beckstrom 1993, p.17). Riparian/wetland Best Management Practices (BMPs) and INFS guidelines protect habitat for

this species during road building, logging and grazing where it occurs near perennial streams. Interim management recommendations for Montana include avoiding habitat disturbing activity within 100 meters of sphagnum mats or associated streams and wetlands and minimizing domestic livestock grazing in drainages with sphagnum mats present (Reichel and Beckstrom 1993, pp 23-24).

Environmental Baseline: Sema Meadows supports documented populations of northern bog lemmings. It is assumed that the moist forest types surrounding Sema Meadows also provide some suitable habitat, based on findings in other areas of the Priest lake Ranger District.

Rationale for No Further Analysis: Management recommendations for this species apply whether or not populations are present. Wetland protection measures, including project design features for fisheries, watershed and sensitive plant habitat would also address the needs of lemmings. Implementation of either action alternative may affect this species but would not result in reduced viability or the need for federal listing. This species will not be discussed in Environmental Consequences.

Fisher (Martes pennanti)

Fishers are considered rare throughout most of Idaho. The fisher is a medium-sized carnivore is an opportunistic predator, eating anything that it can catch. Major prey species include small to medium-sized mammals and birds and carrion. Fishers are found only in North America; they occur from southern Canada south into the northwestern states, California and the Great Lake States. Fishers occur most commonly in landscapes dominated by mature forest cover. In the Pacific states and the Rocky Mountains, they appear to prefer late-successional coniferous forests in the summer and mid- to late-successional forests in the winter.

Fishers prefer habitats with high canopy closure (>80%), and "avoid areas with low canopy closure (less than 50%)" (Powell 1982). They also have been known to use riparian areas disproportionately more than other habitats (Jones and Garton 1994, p. 386). In north central Idaho, grand fir and spruce forested riparian habitats were preferred by fishers in the summer (Jones 1991, p. 90), and elevations from approximately 3,000 to 5,000 feet were used. In Jones' study, fishers avoided more open stands (>40% crown cover), drier habitats, and stands dominated by smaller trees (ibid). In extreme northern Idaho, they are thought to predominantly inhabit mid-elevations (Johnson pers. comm. 1991).

Habitat requirements of fishers are thought to be associated with the physical structure of the forest and with associated prey. This structure includes the vertical and horizontal complexity created by a diversity of tree sizes and shapes, light gaps, dead and downed wood and the layers of overhead cover. Large-diameter spruce and grand fir snags and large downed material are used for denning and foraging. Fishers also need late-successional habitats "linked together by closed-canopy forest travel corridors" (Jones 1991, p. 112). Fishers tend to avoid non-forested areas (Powell and Zielinski 1994, p. 55).

Home ranges for fishers vary with prey densities. Studies indicate that the mean home range for adult males is 15 square miles, nearly three times the females' range of six square miles (ibid, p. 57). Results of one study indicated a home range of 31 square miles (82.6 square kilometers) for

males and 15.6 square miles (41 square kilometers) for females (Heinemeyer and Jones 1991, p. 13).

Fishers tend to avoid humans and generally are more common where human populations and disturbance are low (Powell and Zielinski 1994, p 63). Fisher populations can also be jeopardized by the trapping of coyote, fox, bobcat, and American marten (ibid). Habitat security in the form of low road density that reduces trapping lowers this risk.

Environmental Baseline: Most of the Sema Creek drainage is considered capable fisher habitat, based on the prevailing habitat types, topography, and elevation. Suitable denning habitat for fishers is lacking because of stand replacing fires that swept through the drainage in 1926. No evidence of fisher use in the Sema Creek drainage has been observed during snow tracking surveys.

Rationale for No Further Analysis: The effects on fisher by implementation of either alternative B or C would be similar. No suitable denning habitat for fisher would be impacted by proposed management activities. The impact of the new road construction on National Forest lands would be insignificant. Current open road densities in the area are low; because the roads would be restricted to public motorized use, open road densities would not be increased. New road construction would not contribute measurably to the overall fragmentation of capable or suitable habitat. Implementation of either action alternative may impact this species but would not result in reduced viability or the need for federal listing. This species will not be discussed in Environmental Consequences.

*Wolverine (*Gulo gulo*)*

The wolverine ranges from Alaska throughout most of Canada and parts of the northwestern United States. The species inhabits high-elevation, mature coniferous forests with openings and prefers rocky places with scattered pockets of timber (Banci 1994, pp. 114-115). They avoid areas of dense, young timber and are rarely found in large open areas. They also require remote habitat with minimal human activity and appear to select unroaded areas (Lyon et al. 1978, p. 130; Groves 1987, p. 16). Wolverine feed on a variety of small mammals but also rely heavily on carrion.

Mortality associated with human/wolverine interactions is considered one of the primary limiting factors in wolverine populations. Improved access increases the potential for human/wolverine interactions, which can lead to loss by shooting or incidental take by trapping (wolverines are occasionally taken by trappers focusing on other furbearers such as lynx, bobcat and American marten). Other factors that may threaten local population viability include reductions of "wilderness refugia" (large areas of habitat with limited human access), natural reserves or food availability (Butts 1992, pp. 30-34).

Male wolverines tend to use lower elevations in the winter, whereas females tend to be found in higher elevation areas (Krebbs 1999). Both sexes tend to be found at higher elevations in summer, when these areas provide the greatest potential food supply (Hornocker and Hash 1981, p. 1291; Krebbs 1999).

Environmental Baseline: The proposed project area's remote forested character provides high quality habitat for wolverines. Because of the low elevation, the project area does not contain suitable denning habitat, so the risk of disturbance during the sensitive denning period is not a factor for this species in this area. District species occurrence records indicate that wolverine have been documented in the surrounding landscape in the past (November 1980, July 1981, August 1981 and July 1991).

Rationale for No Further Analysis: Wolverines may be displaced during road construction and periods of road use. No suitable denning habitat for wolverine would be impacted by proposed management activities. New road construction on National Forest lands associated with either action alternative would have little impact on wolverine based on the overall low open road densities in the area and the small amount of road that would be constructed. New roads would be managed to restrict public access, so the risk of mortality would be negligible. The potential impacts to wolverine would be similar to impacts to grizzly bears (see Environmental Consequences discussion on effects to grizzly bear). Implementation of either action alternative may impact wolverine but would not result in reduced viability or the need for federal listing. No further discussion of this species will be included in Environmental Consequences.

Other Management Indicator Species

Moose (Alces alces)

Moose are considered an important management species on the Priest Lake Ranger District. Moose are the largest member of the deer family in North America. Throughout much of the year, they are strongly associated with early succession habitats with abundant shrub species for forage. During the summer, when ambient temperatures are high, moose are often drawn to heavily timbered habitats to aid the maintenance of thermal regulation.

Environmental Baseline: The Kalispell Basin big game wintering area was identified in the IPNF Forest Plan as an important area for moose (USDA 1987). This area has been noted as important for maintaining moose populations in the state of Washington. Moose were first noted in Washington and in the Kalispell Basin wintering area in 1956. It appears that moose first were drawn to the area following wildfires after which shrub fields which dominated the area. This abundance of shrub fields apparently contributed to the success of the moose population within Washington and Kalispell Basin.

Rationale for No Further Analysis: The effects on moose by implementation of either alternative B or C would be minimal or undetectable. Restricting access on the newly constructed road would minimize disturbance to moose. No high quality habitats such as shrubfields would be impacted. No further discussion of this species will be included in Environmental Consequences.

Other Species And Habitats

Forest Land Birds

Forest land birds include all the avian species sometimes collectively termed 'neotropical migrant birds' and 'resident songbirds'. This group of birds is not treated separately by species because they are an extremely diverse group of species, with widely divergent habitat requirements. Surveys for forest land birds were conducted north of the project area in August 2000 and south of the project area in July 1996; results of the surveys are included in project file. Implementation of any alternative, including no action, would affect some species in this group at the expense of others. It would be impossible to treat all the individuals in this group separately. However, some species are represented by other habitat elements in previous discussions, including dry-site species (flammulated owl), riparian species (harlequin duck), lower seral stage species (lynx), wetland species (northern bog lemming and harlequin duck), old growth (flammulated owl, boreal owl, fisher, pileated woodpecker and northern goshawk), and snag-dependent species (pileated, white-headed and black-backed woodpeckers).

Rationale for No Further Analysis: The potential impacts of implementation of either action alternatives on populations of forest land birds are anticipated be minimal. Only a slight change in existing habitats would occur (six acres in alternative B or 3.8 acres in alternative C). The difference between the two alternatives is considered minor or undetectable. This species group will not be discussed in Environmental Consequences.

Environmental Consequences

The following discussion analyzes the effects to various wildlife species discussed in Affected Environment. It was determined that the proposed actions could affect two listed Threatened and Endangered species, lynx and grizzly bear. Direct, indirect and cumulative effects are discussed for both of these species.

The USDA Forest Service policy (FSM 2670) requires a document review, or Biological Assessment, of Forest Service programs or activities in sufficient detail to determine how an action may affect Threatened, Endangered, Proposed or Sensitive species. Consultation with the US Fish and Wildlife Service is mandatory if the biological assessment concludes that a proposed action may have an effect on federally listed species or habitat. The biological assessment for threatened, endangered, and proposed species is a “stand-alone” document.

The existing condition is a product of past activities and events, both human-caused and natural. Habitat conditions resulting from past and present actions and activities were included in the information databases. The following analysis is addresses the effects those actions combined with the proposed Federal action. The effects of reasonably foreseeable actions on private lands are discussed in the cumulative effects section for each species.

Threatened And Endangered Species

Grizzly Bear (Ursus arctos horribilis)

Analysis Process

The analysis of effects to grizzly bears focuses on changes to security habitat, core habitat and road densities within the bear management unit. Security habitat is considered that which is outside the influence of open roads, high use recreational sites, and management activities such as timber sales. Roads that are managed for restricted access such as with gates or guardrail barriers are not considered to detract from grizzly bear security habitat.

The influence zone of open roads on surrounding habitat is considered to be 0.25 miles. Grizzly bear core habitat is outside of the influence of both open and restricted roads. The influence zone used to determine core habitat is 0.31 miles.

The basis for the determination of cumulative effects on grizzly bear is the grizzly bear management unit. For the analyses of the effects of the Stimson Lumber company access request, the cumulative effects area used for grizzly bear is the Kalispell-Granite grizzly bear management unit (BMU). The rationale for cumulative effects analysis for grizzly bears follows the guidance outlined in the IPNF Forest Plan, Appendix U (1987).

Effects Common to All Alternatives

Cumulative Effects - The condition of security and core habitat for grizzly bears is based on effects of past, present and reasonably foreseeable activities that would impose impacts on security and core habitat.

Activities associated with other private industrial lands in the bear unit in sections 3 and 9 of T36N R45E currently result in a 1.26 percent reduction in security habitat in the Kalispell-Granite BMU.

The Bismark Timber Sale (USDA 1999) will reduce security habitat by 0.5 percent during the spring, summer, and fall seasons. No core habitat reduction will occur from implementation of the Bismark Timber Sale. Open roads within the bear unit reduced security habitat by 18.6 percent of the GBMU during spring (March 15 to June 30), by 24.26 percent during summer (July 1 to September 10), and by 18.62 percent during the fall (September 11 – November 15).

Other activities that affect security habitat within the Kalispell-Granite GBMU include high levels of human activity associated with the dispersed recreational sites such as Pettit Lake, Stagger Inn, and the Roosevelt Grove of Ancient Cedars. Activities within the Kalispell-Granite BMU that would not affect security or core habitat include the following:

- Post-harvest activities associated with the Dusty Peak Timber Sale
- Art's Roadside Salvage, which is associated only with open roads
- Special use permit for outfitting and guide services, which covers the entire BMU

- Operation of the Indian Mountain Lookout
- Huff Lake Interpretative site.

Reasonably Foreseeable Actions

Reasonably foreseeable actions within the Kalispell-Granite BMU include the following:

- Maintenance of open roads
- Maintenance of recreational and fire trails
- Granite-Reeder fuels Reduction project
- Management activities on private industrial lands in the BMU.

Alternative A

Direct and Indirect Effects – No impacts to grizzly bear or habitat are anticipated. Security or core habitat for grizzly bears would not be impacted. Neither open nor total road densities would change.

Alternative B

Direct and Indirect Effects - The proposed activities under this alternative may displace grizzly bears. Open road density would change slightly during periods of road construction and use, but would be partially mitigated by restricting access on the new road. Habitat loss of six acres from road construction and right-of-way clearance would reduce the amount of cover for bears. The reduction would be partially mitigated by revegetation along the roadsides and by the use restrictions that would be imposed after the road is constructed.

During construction and eventual use of the road on National Forest lands, security habitat for grizzly bears would be reduced by 138 acres. This reduction in security habitat would be partially mitigated by restricting access on the new road system both during and after construction. Core habitat for grizzly bear would also be reduced by 151 acres as a result of activities on National Forest lands.

Effects Common to Alternatives B and C

Cumulative Effects - The condition of security and core habitat for grizzly bears is based on effects of past, present and reasonably foreseeable activities that would affect those habitats.

The proposed access request and associated activities in section 5 of T36N R45E would result in an additional 0.8 percent or 720 acres reduction in security habitat within the grizzly bear management unit (table 2). Security habitat would be maintained at 73.8 percent. Spring and fall security habitat would be maintained at 79.9 percent, and summer at 73.8 percent. In addition, activities associated with other private industrial lands in the bear unit in sections 3 and 9 of T36N R45E currently result in a 1.26 percent reduction in security habitat in the BMU. Security habitat would be maintained above the established 70 percent threshold for all seasons.

Management activities associated with either Alternative B or C would reduce core habitat for grizzly bears by 0.9 percent or 798 acres of the total bear management unit. Core habitat in the BMU would be reduced cumulatively from 52.6 percent to 51.7 percent. Obliteration of roads #319 and #1104 (the Harvey-Granite and Cache Creek road systems) in August 1998 increased core habitat by 2,043 acres or 2.4 percent in the Kalispell-Granite GBMU. The road obliteration and core increase were intended to offset imminent core losses anticipated with the current access request. The obliteration increased core habitat within the BMU from 50.2 percent to the current 52.6 percent.

The proportion of the bear management unit with open road densities greater than 1 mi/mi^2 would increase from 30.5 percent to 31.4 percent in alternative B and 31.3 percent in alternative C. This would be below the established standard threshold of 33 percent. The proportion of the BMU with total road densities greater than 2 mi/mi^2 would also increase from 24.8 to 25.6 percent. The increase in both the open and total road densities would primarily result from planned road construction on Stimson Lumber Company lands and would remain within established thresholds.

Determination of Effects

Because the proposed road construction on National Forest lands would reduce security and core habitat for grizzly bears the activity may affect grizzly bears. The reductions in security and core are small or minimal, and the established thresholds and standards would be met. Therefore, it was determined that implementation of this alternative would not be likely to adversely affect grizzly bears.

Table 3. Impacts to grizzly bear habitat attributes resulting from the proposed access request within the Kalispell-Granite BMU.

	Alternative A	Alternative B		Alternative C	
	Total	National Forest Lands Only	National Forest and Private Lands	National Forest Lands Only	National Forest and Private Lands
Habitat Security Reduction	N/A	139 ac.	720 ac.	122 ac.	722 ac.
Core Habitat Reduction	N/A	151 ac	794 ac.	127 ac.	798 ac.
Open Road Density (>1mi/mi^2)	30.5 %	30.5 %	31.4 %	30.5 %	31.3 %
Total Road Density (>2mi/mi^2)	24.8 %	24.8 %	25.6 %	24.8 %	25.6%

Reasonably foreseeable activities on private lands would also reduce the amount of available security habitat and core habitat for grizzly bears. The activity may affect grizzly bears;

however, core habitat created through obliteration of the Harvey-Granite and Cache creek road systems 'offset' the anticipated core habitat reductions associated with Stimson's planned activities. The obliterations provided a net increase in core habitat so that the established standard of no net loss would be met. Additionally the open road density thresholds and total road density thresholds would not be exceeded. Therefore, planned activities on private lands in the BMU are not likely to adversely affect grizzly bear or grizzly bear habitat.

Alternative C

Direct and Indirect Effects - Grizzly bears may be displaced with implementation of this alternative. Open road density would change slightly during periods of road construction and use, but would otherwise not change. Habitat loss of 3.6 acres due to road construction and right-of-way clearance would reduce the amount of cover for bears. This would be partially mitigated by revegetation along the roadsides and restriction on use of the new roads after the planned activities associated with the road system have been completed.

During road construction and eventual use on National Forest lands, security habitat for grizzly bears would be reduced by 122 acres. This reduction in security habitat would be partially mitigated by restricting access on the new road system both during and after construction. Core habitat for grizzly bear would also be reduced by 127 acres.

Determination of Effects

Because the proposed road construction on National Forest lands would reduce security and core habitat for grizzly bears the activity may affect grizzly bears. The reductions in security and core are small or minimal, and the established thresholds and standards would be met. Therefore, it was determined that implementation of this alternative would not be likely to adversely affect grizzly bears.

Reasonably foreseeable activities on private lands would also reduce the amount of available security habitat and core habitat for grizzly bears. The activity may affect grizzly bears; however, core habitat created through obliteration of the Harvey-Granite and Cache creek road systems 'offset' the anticipated core habitat reductions associated with Stimson's planned activities. The obliterations provided a net increase in core habitat so that the established standard of no net loss would be met. Additionally the open road density thresholds and total road density thresholds would not be exceeded. Therefore, planned activities on private lands in the BMU are not likely to adversely affect grizzly bear or grizzly bear habitat.

Consistency With the Forest Plan and Other Regulatory Direction

All three alternatives would be consistent with the Forest Plan standard (II-11) for providing for recovery as outlined in species recovery plans or other management plans and guidelines for federally listed species such as the grizzly bear; and Forest Plan Standard (II-9) for maintaining viable populations of all species.

Lynx (Lynx Canadensis)

Analysis Process

Lynx Analysis Units (LAUs) were specified to encompass areas of suitable habitat and to emulate the known annual home range size for a female lynx. Habitat for lynx in the project area was identified through a combination of field review of the proposed project and through an evaluation of timber stand and habitat information. Specific stand information including habitat type, stand structure, forest cover type and overstory canopy closure were used in a computer model to measure effects. Direct effects would include the loss of suitable habitat or direct mortality in the project area. Indirect effects would include changes in suitable habitat through time. The cumulative effects area for lynx would be the Sema Lynx Analysis Unit (LAU).

Effects Common To All Alternatives

Indirect Effects - Habitat succession would continue in the analysis area. Natural processes such as forest insects and disease in mature stands would in some cases increase habitat for denning, as trees die and fall to the forest floor and provide complex structure for lynx to rear kittens.

If a lynx were reported during any operations on National Forest lands, management activities would be delayed or altered as necessary, and protection measures would be implemented (see Chapter II, Features Common to All Action Alternatives). Those measures would effectively protect lynx and other TES species.

Cumulative Effects - Winter recreation such as snowmobiling is a popular activity within this LAU. Groomed snowmobile routes are maintained on Forest roads 302 and 1362. Other ungroomed roads receive lower levels of dispersed snowmobiling use. One identified 'snowmobile play area' of approximately 900 acres is located in the western portion of the lynx analysis unit (IPNF Biological Assessment, 2000). In addition, open and semi-open areas adjacent to developed snowmobile trails often receive periodic dispersed snowmobile use.

It is thought that lynx may be displaced from areas where high levels of winter recreational use occur, and that these activities tend to reduce the availability of winter foraging habitat in some areas. Maintained trails for snowmobiling also provide easy access for winter trapping, which is a documented source of lynx mortality. There would be no net increase in groomed snowmobile routes or dispersed snowmobile use with implementation of any of the alternatives.

Reasonably Foreseeable Actions

Other ongoing and reasonably foreseeable activities that would have an impact on lynx in the Sema Lynx Analysis Unit have been included in the determination of the total amount of habitat which is currently suitable either as foraging habitat, denning habitat, or as unsuitable for lynx. Such activities include existing, ongoing and future activities on private industrial lands within the LAU (table 3). Other activities in the Sema LAU that would affect lynx include maintenance on recreational trails and on open roads.

Alternative A

Direct and Indirect Effects - This alternative would have no direct effects on lynx or their habitat. The bulk of the project area would continue to provide suitable habitat components for lynx. The risk of mortality for lynx would remain at current levels throughout the project area.

Alternative B

Direct and Indirect Effects - The construction of 4,000 feet of road on National Forest Lands would alter approximately six acres of lynx habitat. Habitat considered as low quality forage habitat for lynx would be converted to an unsuitable condition as a result of road construction and right-of-way clearing.

Natural stand successional processes would continue in the analysis area as described in Alternative A. Existing forage habitat for lynx would continue to mature; some areas would naturally increase and others would decrease in quality as lynx forage habitat. Insects and disease would, in some cases, increase habitat for denning as trees die and fall to the forest floor and provide structure for lynx to rear kittens.

Cumulative Effects - Planned activities in section 5 (managed by the Stimson Lumber Company) would affect 345 acres of currently low quality forage habitat for lynx. As a result, these 345 acres of low quality forage would become unsuitable lynx habitat and would remain unsuitable for approximately 15 years or until vegetation regrowth has occurred. Under Alternative B, an additional six acres of low quality forage would be affected.

The Federal and private activities, along with any other reasonably foreseeable actions, would cumulatively reduce low quality forage from 57 to 54 percent of the LAU (table 3). Even with the impacts to denning habitat, the proportion of denning habitat within the LAU would be within established guidelines. The overall proportion to denning habitat within the LAU would not change measurably. The proportion of unsuitable habitat in the LAU would be increased from six percent to nine percent. This would be well within the established guidelines both for total portion of the LAU in unsuitable habitat and for unsuitable habitat created within the last decade.

After approximately 15 years, trees growing in harvested areas may provide enough cover and browse to support populations of snowshoe hares, the primary prey for lynx. However, the suitability of this habitat could be short-lived if these areas are pre-commercially thinned.

As newly created openings in the Sema LAU become reforested, they would eventually provide enough concealing cover for lynx to move through them. Forest openings would be created by timber harvest on Stimson lands. The Lynx Habitat Management Plan Biennial Report (Duke Engineering and Services 1998) predicts habitat values and changes in juxtapositions, seasonal forage and denning habitat from management activities. This model would be utilized in timber sale planning on Stimson Lumber Company lands (Duke Engineering and Services 1998). Connectivity would therefore be maintained on Stimson lands and across the landscape.

New road construction on National Forest and Stimson lands would be an extension of existing restricted roads. These new road segments would be closed to the public both during and after project activities. The open road density within the Sema lynx analysis unit would not change.

Determination of Effects

Because the proposed road construction on National Forest lands would impact suitable habitat for lynx, the activity may affect lynx. However, the reduction in suitable habitat would be minimal, and the established thresholds and standards would be met. Therefore, it was determined that implementation of Alternative B would not be likely to adversely affect lynx.

Reasonably foreseeable activities on private lands would reduce the amount of available suitable habitat for lynx and thus may affect lynx. Because the established thresholds and standards for the management of lynx habitat would be met, it was determined that those activities would not be likely to adversely affect lynx or lynx habitat.

Table 4. Summary of impacts to lynx habitat attributes in the Sema lynx analysis unit (LAU).

Habitat Attribute	Existing Condition		Alternative A		Alternative B		Alternative C	
	Acres	(%)	Acres	(%)	Acres	(%)	Acres	(%)
Denning Habitat	5,987	25	0	25	0-	25	-1.8	25
High Quality Forage Habitat	2,193	9	0	9	0	9	0	9
Low Quality Forage Habitat	13,925	57	-420	55	-771	54	-767	54
Unsuitable Habitat	2,247	9	+420	11	+771	12	+768.8	12
Unsuitable Habitat created in last Decade	1,385	6	+420	8	+771	9	+768.8	9
Total	24,351							

Note: Values for Alternative A include reasonably foreseeable actions on private lands in the LAU, whereas values for Alternatives B and C include reasonably foreseeable actions in addition to impacts in Section 5.

Alternative C

Direct Effects - The construction of 2,500 feet of road on National Forest lands would alter approximately 3.8 acres of lynx habitat. Approximately two acres considered as low quality forage habitat and 1.8 acres of lynx denning habitat would be converted to an unsuitable condition as a result of road construction and right-of-way clearing. Because design criteria establish that road construction activities would not occur during the lynx denning season, no displacement of females with kittens is anticipated to occur during this critical season.

If a lynx were reported during operations on National forest lands, management activities would be delayed or altered if necessary, and protection measures would be implemented (see Chapter II, Features Common to All Action Alternatives). Those measures would effectively protect lynx and other TES species on National Forest lands.

Cumulative Effects - Under Alternative C, the impact to low quality forage would be four acres less than under Alternative B, but impacts would occur to 1.8 acres of denning habitat. Overall cumulative effects associated with Alternative C would not differ significantly from Alternative B.

Determination of Effects

Because the proposed road construction on National Forest lands would impact suitable habitat for lynx, implementation of Alternative C may affect lynx. However, the reductions in suitable habitat would be minimal, and the established thresholds and standards would be met. Therefore, it was determined that the activity is not likely to adversely affect lynx.

Reasonably foreseeable activities on private lands would also reduce the amount of available suitable for lynx and thus may affect lynx. Because the established thresholds and standards for the management of lynx habitat would be met, it was determined that those activities would be not likely to adversely affect lynx or lynx habitat.

Consistency With the Forest Plan and Other Regulatory Direction

All three alternatives would be consistent with the Forest Plan standard (II-11) for providing for recovery as outlined in species recovery plans or other management plans and guidelines for federally listed species such as the Canada lynx; and Forest Plan Standard (II-9) for maintaining viable populations of all species.

Water Resources

Regulatory Framework

The principal law governing pollution in the nation's streams, lakes, and estuaries is the Federal Water Pollution Control Act (P.L. 92-500, enacted in 1972), commonly known as the Clean Water Act (amended by P.L. 95-217 in 1977, P.L. 97-117 in 1981, and P.L. 100-4 in 1987). Congress enacted the Clean Water Act as the first comprehensive national clean water legislation in response to growing public concern for serious and widespread water pollution. The Clean Water Act is the primary federal law that protects the nation’s waters, including lakes, rivers, aquifers and coastal areas. The Clean Water Act's primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental national goals:

- Eliminate the discharge of pollutants into the nation's waters, and
- Achieve water quality levels that are fishable and swimmable.

In all activities, the Forest Service is required to meet the Clean Water Act. Through the Clean Water Act, each state of the union was required to provide guidance and direction to protect and restore water bodies. The State of Washington met this federal requirement through their state recognized best management practices. The Forest Service is required to meet and/or exceed State Best Management Practices to protect water quality.

The Forest Plan provides direction regarding the management of land to enhance and protect aquatic resources. Specific goals and standards are presented for each resource. Goals 4, 18, and 19 for water quality are specific to this project (Forest Plan page II-1). Specific standards for the water resources are found on page II-33 of the Forest Plan. There is no listing of specific numerical thresholds or standards for water quality given; instead, the Forest Plan relies on State Standards. According to Appendix CC of the Forest Plan, the South Fork of Granite Creek is a "scheduled" drainage. A scheduled drainage, which means that, "…site specific data does not indicate a sediment/fish habitat quality problem exists. The drainage could be scheduled for timber harvesting" (Appendix CC of the IPNF Forest Plan, pg. CC-2).

The Environmental Protection Agency and the State of Washington are responsible for enforcement of the State standards. The Forest Plan states that the Forest will "maintain high quality water to protect fisheries habitat, water based recreation, public water supplies and be within state water quality standards" (Forest Plan, Chapter II, p. 27). The use of Best Management Practices (BMPs) is also required in the Memorandum of Understanding between the Forest Service and the State of Washington as part of our responsibility as the Designated Water Quality Management Agency on National Forest System lands. The State's water quality standards regulate non-point source pollution from timber management and road construction activities through application of BMPs. The BMPs were developed under authority of the Clean Water Act to ensure that Washington's waters do not contain pollutants in concentrations that adversely affect water quality or impair a designated use. State-recognized BMPs that would be used during project design and implementation are contained in Appendix A.

The State of Washington recognizes instream uses of water as beneficial and capable of being protected through the administration of the water code and regulations. The 1967 Minimum Water Flows and Levels Act (Chapter 90.22 RCW) directed the Washington Department of Ecology to adopt regulations to establish minimum flows (or levels), on streams and lakes to protect "fish, game, birds, and other wildlife, recreational or aesthetic values or to preserve water quality." In 1971, the Washington Water Resources Act (Chapter 90.54 RCW) required the Department of Ecology to establish base flows to protect, and where possible enhance and preserve a variety of instream beneficial uses, such as fish, wildlife, navigation, recreation, aesthetics, and other environmental values.

The Washington Forest Practices Rules, particularly WAC 222-30 Timber Harvesting and WAC 222-24 Road Construction and Maintenance, apply to this project. The State of Washington's Antidegradation Policy is found in Washington Administrative Code (WAC 173-201A-070). The Antidegradation policy of the state of Washington is generally guided by chapter 90.48 of the RCW and chapter 90.54 RCW, Water Resources Act of 1971 and is designed to prevent degradation of water resources. A summary of the Washington Antidegradation Policy Act is located in the project file.

Implementation of the prescribed BMPs, design criteria, and feedback loop will prevent adverse impacts to beneficial uses. In summary, this activity will adhere to the Clean Water Act, Washington State Rules and Regulations, and will follow direction established by the Forest Plan.

Recognized Beneficial Uses

Within the cumulative effects analysis area, beneficial uses include recharge to major aquifers, stream habitat for several species of native fish in the streams, extensive riparian and other wetland habitats that are used by fish, wildlife and sensitive plant species, and that serve to moderate flooding and ensure quality water downstream for recreation. For the purposes of this assessment, beneficial uses within the analysis area include protection of coldwater biota and protection of fish habitat.

Methodology

The data for this analysis includes field Forest Service data, aerial photos from 1996, GIS technology, and recent literature. This information is available for review in the project file.

Field Reviews: This project analysis relies on two field reviews in October and November 1997. The first field review included a reconnaissance of both potential road locations and some stream surveying for those tributaries that could be affected by the road location. The second field review documented the condition of the mainstem of Sema and the major tributaries that were crossed. Information from these surveys is located in the project file.

Aerial Photos: Aerial photos from 1996 were used to assess overall slope stability, document historical mass failures, document past land management activities and to project possible cumulative effects analysis areas. A summary of the photo review is located in the project file.

GIS Technology: Geographical Information Systems were used to combine existing databases, proposed activities and data taken from aerial photos to create maps and summary tables of existing as well as possible future conditions. This information is located in the project file.

Recent Literature/X-drain Model: References (Rosgen 1996; Ketcheson and Megahan 1996) and the X-DRAIN model (Elliot 1996) were used to predict the possible effects of the actions on the streams. These references provide the basis for determining how effective prescribed mitigation measures would be or how streams would react to disturbances. The X-DRAIN model is a computer program based on the Water Erosion Prediction Project (WEPP) and was used to predict sediment delivery to the streams from each road crossing.

Methodology for Effects Analysis

Direct effects are those that are immediately detected either in time or space as a result of the proposed activity. Indirect effects are those that are detected either at a later time or place and occur separate from the actual activity. The direct and indirect effects analyses are combined in this document.

Cumulative effects are based on the reference condition, the direct and indirect effects of the proposed activities and any reasonably foreseeable actions. The reference condition of the cumulative effects analysis is presented in the Hydrological Setting section of this document.

Reasonably Foreseeable Activities that would occur in the cumulative effects analysis area include:

- Ongoing road and trail maintenance
- Occasional hunting and berry picking
- Ongoing noxious weed treatments
- Proposed road construction and timber harvesting planned to occur on privately managed lands.

The cumulative effects analysis area is defined as the 2,463-acre (3.8 square miles) sub-drainage that includes the entire watershed upstream of the western most beaver dam complex in Upper Sema Creek (figure 6). This portion of the watershed was selected for the cumulative effects analysis based on an assessment of the proposed actions and the landforms. The proposed activities on National Forest lands are located between 0.6 miles to one mile upstream from the mainstem of Sema Creek. The streams flowing across the proposed easement flow down relatively steep terrain for the first few hundred feet and then the channel gradients become markedly less steep for the last ¼ mile prior to reaching Sema Creek. In this low gradient stream channel, the stream would drop most, if not its entire sediment load and thus very little could reach the mainstem of Sema Creek. However, for the purposes of defining the cumulative effects analysis area, this analysis took a very conservative approach and assumed the worst-case scenario – a failure at a stream crossing on one of the new road crossings. If this worst-case scenario were to occur, then some small amount of sediment could reach fish bearing portions of Sema Creek but would be captured behind one of the existing beaver dams. This defined cumulative effects analysis area is the furthest spatial extent effects would likely be measured as a result of the proposed Federal action.

Methodology for Analysis of Watershed Issues

As described in Chapter II of this document, the watershed portion of this assessment will focus on two issues that affect overall watershed condition: Sediment delivery to streams, and predicted changes to channel morphology.

Sediment Delivery to Streams: This issue was assessed using the data from field surveys, aerial photos, landtype maps, the X-DRAIN model, literature, and GIS technology.

The X-DRAIN model was run so that a relative comparison of sediment delivery between action alternatives could be presented. The X-DRAIN model is intended to predict sediment delivery values from existing roads, not from newly constructed roads. Similarly, the model is unable to account for reductions in sediment delivery attributed to the successful implementation of Best Management Practices. Therefore in the following effects analysis, it is imperative to understand that the sediment delivery values derived from the X-DRAIN model are for the worst-case scenario. By using prescribed BMPs, only a very small fraction of this material would be delivered to the stream.

Predicted sediment delivery rates for both alternatives would be reduced through design criteria. Examples of successful reductions of sediment delivery to streams have been substantiated by the following research: Graveling the road surface with a minimum thickness of six inches of quality aggregate can reduce surface erosion by 80% (Foltz and Truebe 1995; Burroughs and

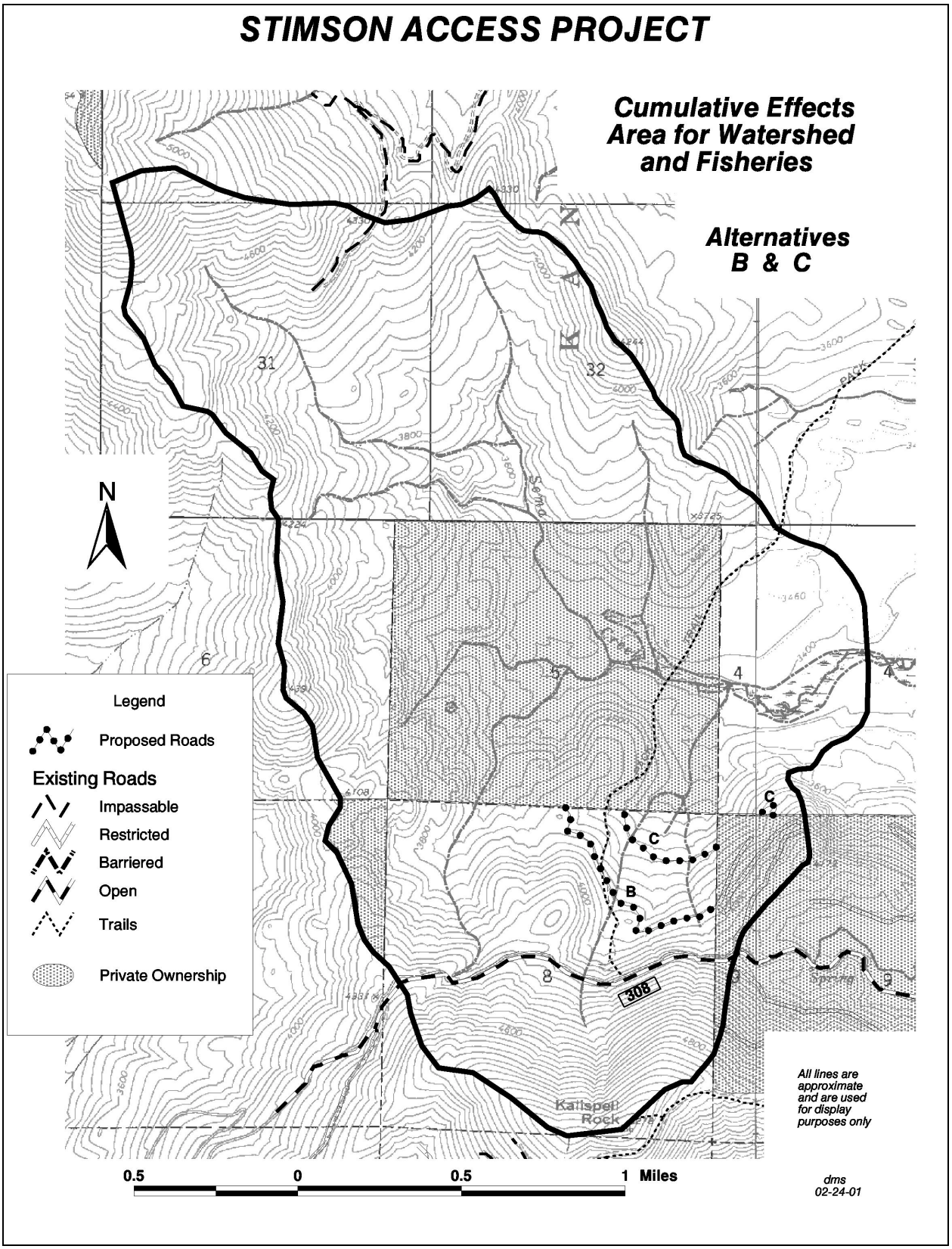

Figure 6. Cumulative effects analysis area for Water Resources and Fisheries.

King 1989). The construction of slash filter windrows can reduce sediment delivery 75 to 85% (Cook and King 1983). Immediate hydroseeding of cut and fill slopes can reduce sediment delivery up to 80% (Burroughs and King 1989). This effects analysis assumes that 80% of the estimated sediment predicted from the X-DRAIN model could be mitigated successfully with these proven best management practices. For example, with the incorporated design criteria and Best Management Practices, it is feasible that this one ton of sediment would be reduced to as little as 400 pounds or about equal to about five 5 gallon buckets of sand. Theoretically, these five 5-gallon buckets of sand would be delivered across the drainages over the length of the entire road. (It is assumed that a 5-gallon bucket full of sand would weigh about 75 pounds). The sediment delivery values predicted using the X-DRAIN model (adjusted for BMP effectiveness) are presented in the Environmental Consequences section. A comparison of the X-DRAIN values with and without BMP mitigation is located in the project file.

Predicted Changes to Channel Morphology: This issue was assessed using data from field surveys, aerial photos, GIS derived data, and reference literature. This issue comparison between the two action alternatives was an analysis and interpretation of the predicted sediment delivery and integration of other relevant factors such as road location, design criteria, stream characteristics, and geology.

Affected Environment

The Hydrologic Setting

The proposed actions are located in the western-most headwaters of the Sema Creek drainage. The entire Sema watershed includes just over 7,000 acres. The cumulative effects analysis focuses on the 2,463-acre subdrainage of Upper Sema Creek (figure 6). Sema Creek is a tributary to the South Fork of Granite Creek, which ultimately joins the mainstem of Granite Creek, one of the larger tributaries to Lower Priest Lake. Based on preliminary field reviews in 1997, Sema Creek meets water quality standards for the State of Washington. The overall condition of Sema Creek was described in 1997 by surveyors as, *"… very stable and do not exhibit any evidence of erosion and active channel migration. The banks are heavily vegetated with grasses and ferns…and are very stable"*.

Reference Reaches: The direct and indirect effects analysis for this specific access project would be limited to the first and second order tributaries flowing off of the north facing slopes of Section 8, where the two access alternatives are proposed. Any sediment generated off of a proposed crossing from the Alternative B route would need to be routed for almost a mile prior to reaching the mainstem of Sema Creek. Similarly, any sediment generated off of a proposed crossing from the Alternative C route would be routed for about 0.6 miles prior to reaching Sema Creek.

The tributaries flowing through the proposed areas of road construction are a mix of A and B channel types (Cobb field notes 1997; Rosgen 1996). The majority of the steeper first order tributaries are A4 and A5 whereas the proposed live channel crossings would occur on B5+ and A5 channel types. The B5 channel type is characterized by a series of rapids with irregularly spaced scour pools. The channel materials are composed of sand with a small amount of gravel.

The B5 stream type is relatively stable where the riparian zone is unmanaged. The A5 stream type is steeper than the B5 channel type and is generally found on slopes in excess of 10%. The substrate of the A5 channel type is predominantly sandy materials with some gravels. In the A5 channel type, bed load transport rates are very high. The channel bed and banks are considered inherently unstable and very sensitive to changes in streamflow regime or sediment supply. (Rosgen 1996).

During the field review of October 1997, it was noted that the existing road on Stimson property was eroding and that some of the sediment was reaching the B5 channel that would be affected by this proposed access. The stream was efficiently moving the sand through the system though some elevated levels of deposition were noted in the streams with the existing road crossing. Though there is elevated sediment in the affected channel, the stream geomorphology is unchanged and the sediment is transitory (see survey notes in the project file). The road crossing did not have the stringent design criteria that are incorporated into the road crossings proposed under this Federal action.

The portion of Sema Creek that is in the cumulative effects analysis area is upstream of a large beaver complex. The tributaries in the proposed project area ultimately flow into an E4 channel reach of Sema Creek (Rosgen 1996). E4 channel types are hydraulically efficient channel forms, which maintain a high sediment transport capacity. Streambanks are composed of silt and are densely rooted with grass sod mats and other shrub species. The vegetation within the riparian zone makes this channel very stable. E4 channel types are very stable unless the stream banks are disturbed, and significant changes in sediment supply and/or streamflow occur (Rosgen 1996).

This E4 section of Sema Creek is a classic meadow stream characterized by a narrow width to depth ratio, stable channel slopes and high entrenchment dissects each of these three broad meadows. The overhanging channel banks are very well vegetated and stable. Generally, the channel width is less narrow at the top of the channel banks and wider at the base of the channel. Within this specific portion of Sema Creek, field surveyors found several older beaver dams. These beaver dams trap natural sediment moving through the system, moderate streamflows and provide physical structure to the creek. There were not enough beaver dams in the meadow to alter the Rosgen channel reach classification. The beaver dams have most likely slowed the water enough over the years to allow natural sediment to settle out. The low gradient of the meadow along with the existing dams add to the natural sinuosity of the E4 channel.

Influence of Geology and Soils on Hydrology

The underlying geology of much of the Sema Creek drainage is granitics with an overburden of glacial till. The till contains a highly variable amount of hard, subangular to rounded gravel and cobble in a coarse loamy to sandy matrix (Kaniksu Forest Landtype Database 1992). The till closest to the surface is commonly loose and permeable, whereas the deeper till can be dense and impermeable. The contact between the two tills is frequently where water is perched. Water moving down the slope tends to be relatively close to the surface. The tendency for water to be close to the surface is especially true near the scarps of ancient mass failures. Soils in this analysis area have a loamy and sandy texture.

The glacial till produced soils are inherently unstable for standard cut and fill road construction because of perched water tables. This perched water is "released" when roads are constructed which cut through the perched water tables. Once these water tables are disturbed, road cutbanks tend to be unstable because of the excess water that constantly weeps out of the banks causing the cutbanks to slough off into ditchlines or culverts. The plugged ditches and culverts force the water out of the ditchlines, thus increasing the risk of road damage and increasing the risk of directly delivering sediment to the streams.

Like the rest of the Sema Creek drainage, the Upper Sema subdrainage (defined for the cumulative effects analysis) has evidence of ancient mass failures. In this particular analysis area, the mass failures are very old (over 5,000 years old) and most likely occurred when the last glaciers were retreating. As the glacier retreated, it dropped surficial materials that created the glacial tills. The mass failures occurred after the glacier had retreated and while there was still considerable moisture. Within the drainage defined for the effects analysis, an aerial photo review determined that both action alternatives would cross one of these ancient mass failures (see Jerry Niehoff, Soil Scientist, Report Memo, 2/13/2000 in the project file.)

When the mass failure nearest the proposed activities occurred, the perched glacial tills moved down the slope and piled up at the base of slope. Therefore, the perched water table is less deep at the top of the slope than it is at the base of the slope. Subsequently, the top portion of the slope would intercept more water than would a similar road cut at the base of the slope. Generally, the stream channels located higher on the slope are more sensitive to water and sediment yield increases.

The terminus of the ancient mass failure is where the landform becomes relatively gentle. It is at this point on the slope, that the main unnamed tributary to Sema Creek (flowing off of the northeast corner of Section) has a greatly reduced gradient and does an abrupt turn. Given the channel's reduced gradient and sharp turn, it is likely that most sediment generated from either action alternative would settle out in the unnamed drainage prior to reaching Sema Creek.

Because of the existing geology, the tributaries within the area are cutting through the old flows of the mass failures as well as the glacial deposits. The result is that these tributaries have a predominantly sandy substrate with a limited amount of larger materials. In cutting through these ancient deposits, these tributaries are cutting through the glacial till and intercepting much of the perched groundwater. The interception of the perched groundwater along with the predominantly sand component of the bed and banks of the streams is what makes these streams inherently unstable.

Historic Land Use

The Sema Creek drainage burned over in 1926 and for the most part has been relatively free of timber harvesting. Land use data compiled for the larger Sema Creek drainage from the hydrologic portion of the Idaho Panhandle National Forests North Zone Geographical Assessment (Draft) is presented in the project file. Timber harvesting and road construction in the cumulative effects analysis area has been very limited (see project file). Roughly 2% of the drainage has been harvested and road density is about 1.2 miles/mile^2. The harvesting that has

already occurred in the private inholdings within the was completed using primarily conventional tractor logging methods and the residual stand of trees has canopy closures of less than 20%.

Sediment Delivery

Current sediment delivery to the tributaries of Sema Creek as well as the mainstem of Sema Creek is a function of natural erosion rates, plus sediment attributable to past ground disturbing activities. The natural rate of soil erosion in the Sema Creek basin is estimated at 15-tons/square mile (based on landtype value accumulation calculated using the WATSED model, Project File). The recent activities and road construction on private land (Sections 7 and 9, T37N, R45E, Willamette Meridian) suggest that sediment delivery to the tributaries of Sema Creek has increased from the road construction. It is estimated that the road density of the privately managed lands in the CEA is 3.8 miles/mile^2. Although road density alone does not characterize the likely condition of a watershed, it can serve as an indicator. Generally, higher road densities translate to higher probabilities of sediment delivery to the streams through road failures because of increased stream crossings, extended ditchlines, and associated road fills (Quigley and Arbelbide 1997). During the 1997 field review, it appeared that the existing roads were delivering sediment to the channels. It is likely that some of this sediment has reached Sema Creek and is currently trapped behind the beaver dams.

Environmental Consequences

Alternative A

Direct and Indirect Effects: Selection of the no action alternative would mean that neither road access alternative would be implemented. Conditions in Section 8, T36N, R45E would remain unchanged in terms of soil and water conditions.

Sediment Delivery to Streams: Under the No Action Alternative, there would still be some delivery of sediment to streams from the channel banks and instream erosion from natural processes. There would not be any detectable changes in the existing level of sediment delivery or movement in the streams.

Predicted Changes to Channel Morphology: There would be no change to channel morphology under the No Action Alternative.

Effects Common to Alternatives B and C:

Direct and Indirect Effects: Both alternatives would have direct and indirect effects to water resources.

Sediment Delivery to Streams: Under both action alternatives, there would be some delivery of sediment to the first and second order drainages crossed by either proposed road.

The predicted sediment delivery values for each action alternative are located in table 4. With the application of design criteria described in Chapter II, the estimated amount of sediment that could be delivered in any year would be reduced by at least 80%. Therefore, under Alternative

B, the estimated amount of sediment delivery to the streams would be approximately equal to approximately 1090 pounds of sediment or about 14.5 five gallon buckets of sediment. Similarly, in Alternative C, the implementation of the design criteria would yield about 380 pounds or about five 5-gallon buckets of sediment.

The sediment generated from either action alternative would not be delivered at one time and would gradually be routed down the stream. During high seasonal stream flows, the first and second order tributaries would effectively transport the sediment down the slope. Some of the material would be trapped behind the smaller natural obstructions in the channels, but most of the material would be delivered to the lower gradient reaches where the sediment would be deposited onto the floodplains. As the high seasonal streamflows ebbed, the material would be distributed behind rocks and woody debris and in eddies. The sediment generated from either road crossing would mostly be deposited in the low gradient reaches of the B channel prior to reaching the mainstem of Sema Creek. Within one or two years of the initial road construction (depending upon weather and stream runoff patterns), the material deposited in the lower B channel would gradually move down to the E4 channel in Sema Creek. At this point the sediment would be efficiently routed down the channel and deposited behind the existing beaver dams.

According to the Priest River Sub-basin Geographical Assessment (USDA draft in progress), the average natural rate of erosion within the Sema Creek drainage would be approximately 15 tons of sediment per square mile. While the amount of sediment predicted to be delivered under either action alternative would be higher than what is currently moving through the system, it would be within the range of natural variability. The large stand replacing fires of 1926 likely increased water and sediment delivery beyond those delivery rates predicted under either action alternative (Minshall and Brock 1991, Minshall et al. 1989, Anderson 1976).

Table 5. Predicted sediment delivery values, adjusted for BMP effectiveness, for each Action Alternative.

Alternative	**Modeled Sediment Delivery per year for the entire road easement, adjusted for BMP effectiveness**
Alternative B	1090 pounds
Alternative C	380 pounds

Predicted Changes to Channel Morphology: The increases in sediment delivery to the first and second order streams would not cause long term measurable changes to any of the channels affected by the proposed road construction under either action alternative. Sediment movement and deposition is a natural function of these streams. Over most of the proposed stream crossings, the amount of projected sediment would not cause long-term changes in channel

morphology to any of the stream systems. There would be some limited pool filling immediately downstream of the new crossings for the first year or two after construction. After two or three years, this material would be transported down the channel and be deposited behind natural obstructions.

The sediment prediction model suggests that for most of the proposed crossings, the amount of sediment delivery to each stream would be small enough to be easily transported through the channel. However, the same predictions for sediment delivery are markedly higher for the first stream crossing proposed under Alternative B. At this particular crossing, it is predicted that with mitigations, approximately 850 pounds of sediment would be delivered annually to the stream. This value is over twice the value of any other proposed stream crossing. The amount of sediment that would be delivered to the first stream crossing under Alternative B would cause changes in channel morphology in the first few hundred feet of the affected stream channel. If the 850 pounds of sediment were delivered to this specific B5 channel type on an annual basis, then the channel would have some pool filling and sediment would be deposited on the floodplains during high flow events. Given the projected amount of sediment that could be delivered, the sediment at this particular crossing would take up to five years to move through the system or become stabilized. As discussed earlier, the first year after road construction has the greatest rate of sediment delivery. The amount of delivered sediment to the streams is expected to be markedly less after the first year to the point where only incidental sediment would be delivered after five years. After five years, it is expected that vegetation would have successfully colonized the exposed soils and the sediment fines would have already been delivered to the streams.

The rest of the streams that would be crossed by either action alternative would be only minimally affected by the annual increases in sediment. Predicted sediment delivery to these streams is much less than the sediment delivery previously noted for the crossing on Alternative B. The immediate impact to channel morphology would be very limited pool filling for the first several yards downstream. This material would not be enough to change channel morphology. These streams would continue to transport sediment normally and the amount of sediment moved through the systems would be within the natural range of variability.

Cumulative Effects

The cumulative effects analysis area is the Upper Sema Creek drainage (figure 6). The terminus of the cumulative effects analysis area is the downstream end of the western most meadow. The project area streams would drain directly into the E4 portion of the Sema Creek drainage just upstream of a series of beaver dams. Unlike the streams that would be crossed by the road easement activities, the mainstem of Sema Creek has a much gentler gradient and is an inherently more stable system in terms of resiliency to increases in water and sediment yield (Rosgen 1996).

Of the reasonably foreseeable activities assessed for this analysis, only the proposed road access and the proposed activities on privately managed lands would affect either sediment delivery or channel morphology. Other than the proposed road easement, there are no activities planned to occur on National Forest lands that would cumulatively affect the issues of concern for this

analysis. Therefore, there is no need to separately address the cumulative effects of only federal actions. The cumulative effects analysis for the action includes both the proposed access across National Forest lands as well as the proposed activities on privately managed lands.

Alternative A

Of no access is granted, it is assumed that Stimson would not be able to treat their inholdings in Section 5. The cumulative effects analysis includes effects of the reasonably foreseeable activities described above.

Sediment Delivery to Streams: If the No Action Alternative were chosen, then the sediment delivery from the smaller tributaries draining Section 8 of the project area would remain unchanged.

Predicted Changes to Channel Morphology: If the No Action Alternative were chosen, then the tributaries draining Section 8 of the project area would not change. The tributaries would continue to deliver sediment at natural rates to larger Sema Creek. There would be no changes to channel morphology.

Cumulative Effects Common to Alternatives Band C:

This cumulative effects analysis assumes that road access would be provided across Section 8 and that Stimson would harvest the timber on their land and construct the road system. The basis of this analysis includes two key documents: 1) a technical report entitled "Erosion and Sediment Control Analysis Sema Creek, Section 5 and 8, T 36N, R45E, W.M. by Western Watershed Analysts (McGreer and Schult 1998), and 2) a letter authored by Stimson personnel on April 29, 1998 documenting their intentions for reducing sediment delivery to the streams (project file). Provided the best management practices and design criteria identified in these two documents are implemented, then the estimated amount of sediment delivery to the streams would be within the realm of natural variability and the streams would be able to process the predicted increases in sediment. The cumulative effects analysis includes effects of the reasonably foreseeable activities described above.

Sediment Delivery to Streams: The proposed road construction on federal lands under either action alternative in combination with the reasonably foreseeable proposed harvest and road construction activities within Section 5 would have little measurable effect on sediment delivery to the tributaries feeding into Sema Creek. Provided the sediment reduction techniques presented in the Western Watershed Analysts technical report (McGreer and Schult 1998) and the April 1998 Stimson letter are followed, then the proposed activities in Section 5 would not increase sediment delivery enough to the mainstem of Sema Creek to create adverse stream conditions. Any cumulative increase of sediment and water yield would be efficiently routed through the mainstem of Sema Creek. Excess sediment would be trapped behind the existing network of beaver dams in Sema meadows. During extreme high flow events, there is a chance that a limited amount of sediment could move through the first meadow complex and be deposited in the second meadow complex.

Predicted Changes to Channel Morphology: Over the course of several years (3 to 5 years) the sediment pulses generated from the Stimson inholdings would move gradually but efficiently through the stream system. Much of the sediment would be stored behind existing obstructions. As the obstructions fail, pulses of sediment would move through the system to be trapped in other downstream obstructions or along floodplains during high flow events.

The proposed actions on Federal land, along with the reasonably foreseeable proposed treatments on private ground and existing conditions within the Sema Creek watershed suggests that the resiliency and channel morphology of Sema Creek would be maintained.

Consistency With the Forest Plan and Other Regulatory Direction

The Forest Service has agreements with the State of Washington to implement Best Management Practices (BMPs) or Soil and Water Conservation Practices for all management activities to meet the objectives of the Washington Forest Practices Rules.

The proposed access routes across National Forest lands would comply with the Clean Water Act and would not adversely affect beneficial uses (refer to the Federal Checklist in the project file).

Fisheries

Regulatory Framework

The National Forest Management Act (NFMA) (1976) requires that the Forest Service manage for a diversity of fish habitat to support viable fish populations (36CFR219.19). Regulations further state that this evaluation should be based on management indicator species (MIS) and the reason for the choice of MIS be documented (36CFR219.19(a)(1)). New planning rules (Federal Register Volume 65 #218) now suggest a more inclusive use of species than MIS to evaluate effects. These new planning regulations require the use of focal species that reflect different ecological components of the entire ecosystem. It also requires the use of threatened and endangered species as focal species.

Section 7 of the 1973 Endangered Species Act (ESA) includes direction that Federal agencies, in consultation with the United States Fish and Wildlife Service, will not authorize, fund, or conduct actions that are likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat. To meet this obligation, the Forest Service must initiate consultation with the Fish and Wildlife Service early in the process, and concurrence with our effects evaluation must be completed prior to signing any final decision.

The Forest Plan for the Idaho Panhandle National Forests (IPNF) provides management goals and objectives for the protection of the fisheries resources. The Inland Native Fish Strategy (INFS) amended the IPNF Forest Plan in August 1995 with additional standards and guidelines to protect the aquatic environment (USDA 1995). These standards provide for specific size buffers on streams, for minimizing the impacts of roads and road construction of stream systems, and for other actions that maintain or improve the current condition of Federal watersheds.

Appendix I of the Forest Plan Item G-1requires that when cumulative effects analyses on stream sedimentation are projected to result in greater than a 20 percent reduction in fry emergence, a more detailed fishery/watershed analysis will be undertaken before an environmental analysis is approved. The 1989 Forest Plan Evaluation and Monitoring Report documents the change away from use of the fry emergence standard (USDA 1989, pages C-1 and C-2). The findings were that it was not a good monitoring tool to report stream health. G-1 was combined with an expanded G-3, which includes a more comprehensive array of fisheries and hydrology parameters.

Private activities related to this access proposal include timber harvest and road building on private land. Although the Forest Service does not sponsor or regulate these actions, they play a role in the cumulative effects analysis for this project. It is assumed that all private actions will be conducted in compliance with Washington Departments Forest Practices Rules (the rules can be accessed at www.wa.gov/dnr/htdocs/fp/fpb/222-30.html).

Additional regulatory requirements related to fisheries resources (*e.g.* Clean Water Act and Idaho Water Quality Standards) are addressed in the Water Resources sections.

Methodology

Documentation of the direct, indirect, and cumulative effects of this project will distinguish between private and Federal actions.

Existing conditions were established for primary habitat components believed to be influencing the production potential of the MIS fish within Upper Sema Creek. Changes to habitat resulting from the alternatives are addressed by measuring changes in physical structures. These physical structures have been shown to be affected by land management activities (Hicks et al. 1991). Habitat components used in this analysis include stream temperature, habitat diversity, cover complexity, and channel stability. Protecting these stream habitat components ensures that the Riparian Management Objectives of the Idaho Forest Plan (1987), as amended by INFS (1995), are achieved.

The cumulative effects analysis area for this project is Upper Sema Creek (figure 5). This boundary is delineated for cumulative effects because it is likely the furthest spatial extent of measurable effects from activities on Federal lands (see Sediment Delivery Risk below). Although highly unlikely, a culvert failure on the Federal portion of this road could result in an increase in sediment in Sema Creek. Because of the large number of beaver ponds in Sema Creek, this sediment would not be transported further downstream.

Habitat Components Important to MIS

Stream temperature is an indicator of aquatic habitat conditions in the cumulative effects area. The harvest of riparian vegetation has the potential to increase stream temperatures by reducing streamside shade (Hicks et al. 1991). The direct removal of riparian vegetation through road construction and timber harvest increases solar radiation. Neither of the MIS thrives in warm

water conditions. Bull trout, in particular, prefers extremely cold (<10°C) water temperatures (Lee et al. 1997).

Habitat diversity (composition and quality) is assessed by the quantity and degree of development of various types of aquatic habitat (e.g. pools, riffles). Stream segments possessing numerous habitats with a wide variety of stream velocities, water depths, and physical habitat configurations are considered more diverse and have a greater potential for meeting the habitat requirements of naturally reproducing MIS populations. Removal of riparian vegetation can reduce instream wood, increase sediment, and change stream morphology. Both MIS prefer complex aquatic habitat.

Cover complexity as an indicator of habitat conditions is evaluated by the degree of habitat partitioning by various structural elements such as large woody debris (LWD), boulders, and undercut banks. This physical separation within habitat units can help maximize fish production by decreasing competition and aggression, reducing predation and increasing carrying capacity. Cover complexity also produces microhabitat conditions that minimize energy requirements and provide refuge for fish. The same surrogates used to reflect changes in habitat diversity are used to display changes to cover complexity, particularly instream wood and channel morphology.

Channel stability influences the quality of pool habitat and helps to establish the trend for aquatic habitat conditions. The discussion of channel stability in Chapter III, Water Resources is incorporated into the assessment of fisheries resources. Changes to channel stability can result from changes in water yield, water timing, and bedload movement.

Management Activity Indicators

It is difficult to directly measure stream habitat components, and there is often a delay between land management activities and altered stream conditions. Accordingly, this analysis will evaluate activities that have been shown to alter habitat components important to MIS. The relationship between the habitat component and the surrogate measurement of change is discussed below. Management activity indicators are discussed in detail in INFS (USDA 1995). The effects are divided between those that occur from actions on National Forest lands and those likely to occur from actions on private land.

Riparian Harvest: For this Environmental Assessment, the amount of riparian harvest will be a surrogate for changes in stream temperature, habitat diversity, cover complexity and channel stability. The direct effect of riparian harvest is the reduction of shade and the amount of large wood in streams. The indirect effects of reducing the amount of streamside vegetation include altering timing and amount of sediment delivery, wood loading in stream, stream temperature, and the hydrologic regime (for review see Meehan 1991). Riparian harvest can reduce egg-to-fry survival by increasing fines in redds, or reduce survival by increasing temperatures outside of ranges tolerated by the MIS and/or by altering carrying capacity by reducing habitat diversity.

For consistency in this analysis, an average distance of 300 feet from fish bearing streams is considered as riparian habitat. Although not all the vegetation within this 300-foot buffer is dependent on a high water table, it does provide conditions necessary to maintain these types of vegetation, shade streams, and limit sediment into streams (USDA 1995, FEMAT 1993). In

addition, harvest within approximately 75 feet of intermittent streams will be considered riparian harvest. By maintaining riparian habitat, the Forest will trend toward meeting the large woody debris Riparian Management Objective in INFS (USDA 1995).

*Sediment Delivery Risk***:** The greatest risk to sediment delivery occurs at stream crossings. Culvert failures can introduce large amounts of sediment into stream channels. Road ditches can also divert sediment into streams. If crossings fail, a direct effect of sediment delivery can be reduced passage of fish. The most likely effects, however, are indirect and cumulative in nature. The indirect effects of these failures include increased fine sediment in redds, and channel simplification due to debris torrents. The cumulative effects of additional sediment delivery can be reduced egg-to-fry survival (by increased fines in redds) and reduced adult survival (by altering carrying capacity by reducing highly utilized habitat such as pools) of MIS. Road failures can ultimately lead to a decline in fish numbers (Meehan 1991). Road building can also result in increased sediment delivery to stream channels, especially if road maintenance is lax (Furniss et al. 1991).

Sediment delivery was evaluated by counting the number of crossings and the amount of road built under each alternative. Although not all crossings have the same direct effect, the number of crossings can serve as a rough estimate of additional risk the alternatives pose to fish. The length of road to be constructed similarly serves as an estimate of risk.

Fish Passage: The placement of culverts at stream crossings can alter the ability of fish to access stream habitat above the culvert. The addition of culverts in streams can modify fish migration, even if it does not directly block assess to streams (Furniss et. al 1991). The indirect effect of new culverts can be to reduce spawning efforts above the culvert. In rare instances, culverts have been known to maintain genetically pure fish above barriers. However, this beneficial use of culvert placement is not part of the purpose and need of the proposed action.

Effects of the alternatives to fish passage were evaluated by the number of stream crossings within fish bearing streams.

Affected Environment

In addition to the direct, indirect, and cumulative effects analysis area, fisheries-related processes at the watershed scale will be discussed. Many of the fish in the Priest Lake Watershed migrate long distances, and hydrologic processes could affect fish populations within Upper Sema Creek.

Fish Presence

Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) are listed as sensitive by the USDA Forest Service Region 1 and as a species of special concern by the State of Idaho. This species is known to use streams in or near the cumulative effects area. Although these fish have not been detected in Upper Sema Creek, this is likely historic habitat for the species. Bull trout (*Salvelinus confluentus*) are listed as threatened under the Endangered Species Act. Bull trout historically utilized the South Fork of Granite Creek and may have used Sema Creek. Brook trout (*Salvelinus fontinalis*) are the only salmonid known to utilize Upper Sema Creek. This species was introduced into the system.

In addition to these better-known, northern pike minnow (*Ptychocheilus oregonensis*), large-scale sucker (*Catostomus macrocheilus*), sculpin (*Cottus spp*.), longnose dace (*Rhinichthys cataractae*) and redside shiner (*Richardsonius balteatus*) likely inhabit the Priest Lake/Granite Creek Watershed (Simpson and Wallace 1982; district files). Introduced fish species include populations of lake trout (*Salvelinus namaycush*), rainbow trout (*Oncorhynchus mykiss*), and warm water lake species.

The current condition of fisheries resources in the cumulative effects areas was established by utilizing information gathered though stream inventories, field reviews, historical records, aerial photographs, analysis of watershed conditions, published scientific literature, and discussions with Fisheries Biologists from the Idaho Department of Fish and Game and the United States Fish and Wildlife Service (USFWS).

Due to the large number of fish species within the watershed area, analysis of direct, indirect and cumulative effects will focus on fish most likely to be affected by the project. Analysis will use the concept of management indicator species (MIS). According to the Idaho Panhandle National Forests Forest Plan, larger groups of organisms or communities can be adequately represented by a subset of the group (USDA 1987). The Forest Plan identifies cutthroat trout and bull trout as potential MIS for fisheries conditions. Because of the current status of these fishes, it is highly likely that both will be designated as focal species when current Forest Plans are revised under the new planning regulation. Their selection as focal species is due not only to their low numbers but also to their importance as indicators of cold water stream systems (Lee et al. 1997, Meehan 1991).

Westslope cutthroat trout and bull trout are native to most of the streams in the watershed (Bjornn 1957; additional data on file). Westslope cutthroat trout are known to currently use streams just below the cumulative effects area for spawning, rearing, and over-wintering. Because sampling for fish presence is not perfect, for this project westslope cutthroat trout will be assumed to be present within the cumulative effects area.

Although bull trout were likely historically present in the cumulative effects area, they have not been documented this high in the Granite Creek drainages. However, it is important that habitat is maintained for this species if they are ever reestablished.

Brook trout are the most prevalent salmonid species within the cumulative effects area. They thrive in modified habitat, compete with westslope cutthroat trout (Shepard et al. 1997), and can hybridize with bull trout (Lee et al. 1997).

For this Environmental Assessment, westslope cutthroat trout and bull trout have been selected as appropriate MIS for fisheries. Although both of these fish may not exist in streams within the cumulative effects area, in general one of the two is found in all large streams within the watershed. It is likely both species occupied Sema Creek historically. Brook trout were not chosen as an MIS species because they have a higher tolerance for habitat disturbance than do the two MIS (Shepard et al. 1997).

One additional species listed on the Regional Foresters sensitive species list, torrent sculpin, could also serve as an MIS. Torrent sculpin, however, have not been documented within the Priest River Sub-basin.

Two other sensitive species, burbot and interior redband trout, and one listed species, white sturgeon, will not be addressed in the Environmental Assessment. These three species are not known to occur in the Priest River Sub-basin (Simpson and Wallace 1978).

Bull Trout

The precise historic distribution of bull trout in the larger watershed, Granite Creek, is unknown. Natural barriers do not inhibit bull trout from accessing the North or South Forks, but barriers do occur in many tributaries. Differences in geologies influenced the quality of habitat in each tributary. For example, streams in South Fork of Granite Creek drain decomposed granites, where streams in the North Fork drain belts. These differences in geology influence the quality of spawning gravels. Spawning habitat in the South Fork of Granite Creek naturally has higher amounts of sand and fine sediment than habitat in the North Fork. This may have influenced spawning success and recruitment in the South Fork. Regardless of the availability of spawning habitat condition, all accessible streams – including Sema Creek - would have likely provided important rearing habitat to juvenile bull trout.

The expansion of lake trout populations has severely depressed bull trout in Priest Lake and the streams that feed it (Fredericks et al 1999, Bowles et al. 1991). The presence of lake trout, hybridization of bull trout with brook trout, and habitat changes from fire and/or management actions, bull trout populations in Priest Lake may now be functionally extinct.

Only small runs of adult bull trout move into Granite Creek and its tributaries. Mauser and Ellis (1985) installed a weir in lower Granite Creek in 1984. Tributary trapping and spawning surveys indicated that bull trout abundance was low in all streams. Only twenty-seven adults and one juvenile bull trout were caught in the weir trap (Mauser and Ellis 1985). Irving (1985) found low densities (0.1/100m2) of bull trout in the South Fork of Granite Creek from the Granite Creek confluence to above Sema Creek in 1982, 1983 and 1984. The low bull trout densities Irving found might indicate that, as of the early 1980s, the effects of introduced species and habitat degradation had already greatly reduced bull trout recruitment from tributaries and adults coming to spawn from the lake.

Adult bull trout were last reported in Sema Meadows (South Fork of Granite Creek) in 1993, which suggests that some spawning may be taking place. The Kalispell Tribe did not find bull trout during snorkel surveys in the South Fork above the Sema confluence in 1997. Annual redd counts have not been conducted in Granite Creek, so the location and numbers of spawning adults are not known.

Surveys for bull trout within Sema Creek have not identified any bull trout (Irving 1985).

Westslope Cutthroat Trout

Irving (1985) found no westslope cutthroat in electrofishing surveys of Sema Creek in 1983 and low cutthroat densities (0.8 fish/100 meters) in 1984. Bio/West surveyors also noted no cutthroat trout in Sema Creek in 1992. If westslope cutthroat trout still occur in Sema Creek they are likely headwater populations in Tabasco or other small tributaries or fish moving into lower Sema from the South Fork Granite Creek.

Snorkel surveys conducted by the Kalispell Tribe in 1997 found westslope cutthroat trout to be the most dominant species in the South Fork Granite with low densities of brook trout lower in the drainage.

Existing Habitat Condition

Determination of current habitat conditions was based upon field reviews, habitat surveys and biological data (on file at District Offices).

Stream surveys classified the entire Sema Creek channel as a meandering, meadow stream. Aerial photos, however, show that Sema Creek is actually more complex than this classification suggests. The channel consists of three broad meadows divided by short sections of confined channels. Each meadow has a meandering stream channel with sandy substrate. Beaver dams occur in each meadow, flooding the main and side channels. Many of the dams are old and are filling with sediment and breaching in places. Stream banks are composed of silt and are densely rooted with grass sod mats and shrub species. The vegetation makes this channel type very stable unless a significant change in sediment and/or stream flow occurs.

Channels in the confined sections have grassy mats and/or trees down to the water's surface. Beaver dams are present but are not as numerous as in the meadow channels. Substrate consists mostly of sand, with pockets of gravels and larger substrate. Sand and gravel bars are present along the lateral channel edges.

Overall pool quality in Sema Creek is higher than in the South Fork of Granite Creek. Large beaver-formed pools with moderate amounts of cover provide excellent rearing habitat.

Pools, runs and glides form most habitat in Sema Creek. Cover in these habitat types is created by aquatic vegetation rooted on the stream bottom, by undercut banks, and by small woody debris. Stream surveys indicate that most pools have spots where branches, undercut banks and aquatic vegetation intertwine to form complex habitat. Larger fish likely control areas with complex cover because it provides them with cover as well as the slow velocities to rest and feed.

Sema Creek drains a geology of decomposed granitics and naturally has a lot of sand and small pockets of gravel substrate. The 1926 fire may have contributed to the large amounts of sand. As beavers occupied some of these burned areas, their dams would have stored much of this material moving downstream.

Substrate in both pools and riffle consists primarily of fine sediment and sand. This suggests few bull trout or westslope cutthroat trout spawning sites in Sema Creek.

Headwater streams in the area of the project are generally steep and confined until near their confluence with Sema Creek. As these tributaries near Sema Creek, they lose gradient and provide an opportunity to deposit sediment before entering the main stem.

Past Natural Disturbance and Land Management Activities

Within the Priest Lake watershed, many activities have compromised the viability of some coldwater biota – especially those chosen for MIS species in this analysis. In addition to past land management activities within Granite Creek, the biggest threat to the MIS species for this analysis area has been the introduction of non-native species such as lake trout (Fredericks et. al 1999) and brook trout (Lee et al. 1997). Diverse conditions of habitat components (stream temperatures, aquatic habitat diversity, cover complexity, and channel stability) that are primarily responsible for regulating populations of native salmonids in the watershed have enabled the non-native populations to persist, albeit at suppressed levels. Analysis of existing conditions indicates that many streams in the watershed continue to recover from the residual effects from historic pulse-type (fires, volcanoes) disturbance acting in isolation or in combination with effects from on-going press-type (timber harvest, road building) disturbances (for a review of these effects in general see Chamberlin et al. 1991).

In 1926 most of the Sema Creek watershed burned. The quality of fish habitat conditions in the project area is very near what would be expected under natural conditions following a large fire (for a description of general effects of fire on fish, see Gresswell 1999).

Very little active management has occurred on Federal lands within Sema Creek watershed. Recently, Stimson Timber Company harvested portions of two sections in the watershed.

The lack of valley bottom roads or extensive road development within Sema Creek has generally preserved the landscape attributes one would expect in the absence of land management (see Lee et al. 1997 or Dose and Roper 1994 for a general description of the effects of roads and land management on stream habitat and fish populations).

Environmental Consequences

Effects to Management Activity Indicator Habitat Components

The effects of both Federal and private activities on the management indicator habitat components will be tracked separately in each section below. A discussion of cumulative effects within each section will be limited to the spatial extent of the effects of Federal activities. Cumulative effects of the combined Federal and private actions on the MIS will then be discussed.

Direct, Indirect and Cumulative Effects at the Analysis Area Scale

Alternative A

Under this alternative, there would be no direct, indirect or cumulative effects to any MIS habitat components, since management activities would not change from current levels.

Effects Common to Alternatives B and C

Riparian Harvest: Riparian harvest can increase stream temperatures by increasing solar radiation to the stream. Under either action alternative, the loss of riparian habitat would not benefit MIS. The loss of riparian vegetation on Federal lands would result from road construction in Riparian Habitat Conservation Areas (USDA 1995). On Federal lands, only timber harvest associated with road construction would occur within Riparian Habitat Conservation Areas. On private lands, loss of riparian habitat would not only result from road construction but also from the riparian buffers delineated in Washington Forest Practices which are narrower than those required by INFS.

A comparison of the direct effect of riparian harvest on Federal lands reveals little difference between the action alternatives (table 5). Neither action alternative would pose a significant risk to the MIS. Riparian harvest on Federal lands is minimal and only occurs associated with road construction across non-fish-bearing streams. The indirect effect of riparian harvest would be limited to site-specific increases in water temperature no more than 150 feet downstream of where culverts would be installed. Because most of the riparian vegetation will remain on fish-bearing streams (as required by Washington Forest Practices), implementation of either action alternative would not have a measurable effect on fish at the boundaries of the cumulative effects area (Upper Sema Creek).

Table 6. Approximate amount of riparian vegetation removed (within 30 feet of fish-bearing streams or within 75 feet of non-fish-bearing streams).

	Approximate Amount of Riparian Vegetation Removed		
Ownership	**Alternative A**	**Alternative B**	**Alternative C**
Federal	0	375 feet	300 feet
Private	0	4,500 feet	4,500 feet
Total	**0**	**4,875 feet**	**4,800 feet**

Sediment Delivery Risk: The direct risk of sediment delivery is related to the length of new roads constructed and number of new stream crossings. Roads can divert flow (Jones and Grant 1996) and sediment (Furniss 1991) to stream channels. This sediment can then be carried into fish bearing streams. Any value greater than zero indicates additional risk over the current condition.

A comparison of the direct effects of stream crossings and road construction from Federal actions reveals little difference between the two action alternatives (table 6). Although Alternative B has more crossings and more road construction (direct effect), it is also farther from fish-bearing streams so has a lower probability of delivering sediment into these streams.

As a result, it would be difficult to differentiate between these two alternatives with regard to their effect on MIS.

It is highly unlikely that sediment from the failure of stream crossings or roads on National Forest lands would reach the fish-bearing sections of Sema Creek. The reduced gradient of the tributary junction and distance of the proposed roads from a fish-bearing river segment suggests that sediment would settle out before reaching Sema Creek. The cumulative effects analysis, however, took the conservative approach and assumed the worst-case scenario - a massive failure at a stream crossing. There is a low probability of this occurring, since culverts will be designed for a 100-year flow event. If such an event were to occur, some small amount sediment could reach fish-bearing portions of Sema Creek.

Given the worst-case scenario, the directs effects of either alternative on Federal lands could be a measurable amount of sediment entering near where the tributaries flowing from Federal lands join Sema Creek. Under this scenario, the sediment would settle out quickly in the myriad of beaver ponds in upper Sema Creek. If these minimal direct effects of the Federal action are combined with those on private land, the cumulative effects of this project could be to reduce habitat diversity and alter channel morphology in Sema Creek upstream of the beaver ponds.

Cumulative effects might include a delay in the reestablishment of healthy populations of MIS in upper Sema Creek but would not have an impact on those species' long-term persistence within the Priest Lake watershed.

Table 7. Approximate relative sediment delivery risk associated with road building and culvert placement in stream channels.

	Length of road (ft.) / # of culverts installed		
Ownership	**Alternative A**	**Alternative B**	**Alternative C**
Federal	0/0	4,000/5	2,500/4
Private	0/0	16,000/20	16,000/20
Total	0/0	20,000/25	18,500/24

Higher values indicate higher risk and pose some minimal risk to possible historic MIS habitat.

Fish Passage: It has been well documented that most culverts increase the difficulty of passage of fish though streams (Behlke 1991). Flow velocities within a culvert either make passage impossible or increase the energy expenditure over that which would be expended under natural conditions. As a result, the placement of any culvert within a fish-bearing stream has negative consequences on fish species that migrate. Both MIS have been documented migrating long distances.

Because no culverts are planned for placement in fish-bearing streams on Federal lands, no direct, indirect, or cumulative effects to fish passage are expected from implementation of either action alternative (table 7).

One private culvert is planned in a fish-bearing stream within the cumulative effects area. Although this culvert would be designed in accordance with Washington State law, it would likely have some indirect effect to fish passage. The most likely effects are a slight delay in migration timing or minimal increases in energy expenditure. If placed in accordance with law, this one pipe should have almost no effect on the MIS, since the culvert would be at the upper extent of the historic range of these fishes.

Table 8. The number of culverts likely to be placed in fish-bearing streams.

	Number of Culverts		
Ownership	**Alternative A**	**Alternative B**	**Alternative C**
Federal	0	0	0
Private	0	1	1
Total	0	1	1

Effects on MIS (Westslope Cutthroat Trout and Bull Trout) Individuals and Populations

The impact to MIS species is described using the following definitions:

No change in population conditions means that there would likely be no net positive or negative effect to the population within the cumulative watershed effects areas (NEPA effect). No or minimal change in riparian or stream conditions would be necessary to reestablish populations at the watershed scale (NFMA effect).

Likely to result in a long-term reduction in risk of past management actions *to individuals* indicates that the action taken within the watershed is limited in nature but would result in net benefits to individuals when compared to the existing condition. Actions that result in the reduction of risk to individuals include isolated culvert upgrades and small-scale reduction of encroaching roads with little increased risk associated with road building or riparian harvest. This would result in a trend of stream and riparian conditions toward Riparian Management Objectives at the segment or reach scale.

Likely to result in a long-term reduction in risk of past management actions *to populations* indicates that the action is broad enough in scope to positively affect individuals throughout the basin, thereby improving the condition of the population within the cumulative watershed effects area when compared to the existing condition. Actions that result in the reduction of risk to populations include widespread culvert upgrades, large-scale reduction of encroaching roads, and/or increased fish passage without increased risk associated with road building or riparian harvest. This would result in a significant trend of stream and riparian conditions toward Riparian Management Objectives at the subwatershed scale.

Likely to result in a long-term risk to individuals indicates that the action taken within the watershed is limited in nature but would result in a net harm to individuals when compared to the existing condition. Actions that result in the increased of risk to individuals include road building or harvesting in riparian areas without a widespread effort to upgrade culverts and reduce encroaching roads. This would result in a trend of stream and riparian conditions away from Riparian Management Objectives at the segment or reach scale. Federal actions that result

in a long-term risk to individuals may not meet Forest Plan Standards as amended by INFS (1995).

Likely to result in a long-term decline in populations indicates that the action taken within the watershed is widespread and would result in a net harm to populations when compared to the existing condition. Actions that result in the increased risk to populations include widespread road building without a widespread effort to upgrade culverts and reduce encroaching roads. This would result in a trend of stream and riparian conditions away from Riparian Management Objectives at the subwatershed scale. Such a determination would indicate that an alternative would not meet Forest Plan direction to maintain species viability.

Determination of Effects to Management Indicator Species

The following tables summarize the direct and indirect effects of the proposed Federal action and reasonably foreseeable activities on private land. These determinations integrate the preceding evaluations. The determination is the composite rating of the cumulative effects of all actions in an alternative on the MIS species and summarized by the cumulative watershed effects areas. Evaluations were made independently for each ownership.

Comparison of Alternatives

Comparison of alternatives is based on the relative effects to of the Federal action on the MIS. Alternative A would have no direct or indirect effect on the MIS because no action would be taken on National Forest Lands.

Alternatives B and C would have a similar, minimal effect on the MIS. While both have limited direct and indirect effects to stream segments, none of these effects are likely to affect fish. In addition, both action alternatives would result in nearly identical management activities on private lands. The direct, indirect and cumulative effects of activities would likely make it more difficult for either bull trout or westslope cutthroat to become reestablished within Sema Creek.

Table 9. Effects to Management Indicator Species, Alternative A.

Ownership	Likely to result in long term decline in populations	Likely to result in long term risk to individuals	No change in conditions	Likely to reduce long term risk to individuals	Likely to result in long term rise in populations	Direct and Indirect Effects
Federal			X			None – this is the No Action alternative
Private			X			Without access it is unlikely they would be able to manage their land.

Table 10. Effects to Management Indicator Species, Alternative B.

Ownership	Likely to result in long term decline in populations	Likely to result in long term risk to individuals	No change in conditions	Likely to reduce long term risk to individuals	Likely to result in long term rise in populations	Direct and Indirect Effects
Federal			X			The minimal direct and indirect effects of building a handful of road crossings across non-fish-bearing streams would not lead to changed conditions within fish-bearing streams.
Private		X				Road crossings and riparian harvest could result in small increases in water temperature. New culverts could make passage more difficult. Because few cutthroat are in the basin and bull trout have not been found, these changes would likely reduce the ability of these species to become reestablished in Sema Creek.

Table 11. Effects to Management Indicator Species, Alternative C.

Ownership	Likely to result in long term decline in populations	Likely to result in long term risk to individuals	No change in conditions	Likely to reduce long term risk to individuals	Likely to result in long term rise in populations	Direct and Indirect Effects
Federal			X			The minimal direct and indirect effects of building a handful of road crossings across non-fish bearing streams would not lead to changed conditions within fish bearing streams
Private		X				Road crossings and riparian harvest could result in small increases in water temperature. New culverts could make passage more difficult. Because few cutthroat are in the basin and bull trout have not been found, these changes would likely reduce the ability of these species to become reestablished in Sema Creek.

Effects and Basis for Forest Plan Consistency at the Watershed Scale

Historically, the South Fork of Granite Creek and likely Sema Creek had abundant populations of cutthroat trout and bull trout. Currently neither of these basins has strong populations of cutthroat trout, and only the mainstem of Granite Creek has a known population of bull trout.

Although some of the decline is related to land management activities, much of the decline is the result of the introduction of lake trout and brook trout. Currently the Idaho Department of Fish and Game is attempting to change regulations to increase the harvest of lake trout and brook trout so that the survival of bull trout and westslope cutthroat is enhanced. Increasing the harvest of lake trout and brook trout may benefit bull trout and westslope cutthroat trout (Fredericks et al. 1999; Buktenica 1997) in the Priest Lake watershed. Without a reduction in exotic species, it may be difficult for MIS to persist regardless of land management activities.

Development has occurred and will likely continue to occur on private lands near the bottom of Granite Creek. Although timber harvest, road building, home building and other activities will occur on these lands, effects to populations at the watershed scale will likely be minimal because of increased state regulation of these activities and because this section only serves as a corridor for fish migrating between Priest Lake and Sema Creek.

The limited activities on National Forest lands as proposed by the action alternatives would have negligible effects, at both the cumulative effects and watershed scales, on the long-term survival of the MIS. The rationale for this determination is that the direct and indirect effects of either action alternative would likely not reach fish-bearing portions of the stream; even if they do, they would be unlikely to change habitat conditions.

The actions taken on private land associated with the proposed easements could have a minor negative effect on individual fish. Direct and indirect effects such as small reach-specific increases in water temperature, increases in sediment, and culverts in fish bearing streams could reduce the survival rates of the MIS if they were ever to become reestablished in Sema Creek.

The activities proposed on private land would greatly increase the road density in Sema Creek. High road densities have been found to be inversely correlated with bull trout densities (Lee et al 1997). Managed watersheds also tend to have higher densities of brook trout. Because this watershed has experienced little management activity, most of its physical processes are still functioning as they did historically. The cumulative effect of either action alternative would be that bull trout and westslope cutthroat trout might have more difficulty in becoming reestablished within Upper Sema Creek. Overall, however, neither action alternative would have a measurable effect on the persistence of the MIS within the Priest Lake watershed.

Consistency With the Forest Plan and Other Regulatory Direction

Based on the information presented in this document, all three alternatives would meet the Forest Plan Fisheries Standards (1987) as amended by the Inland Native Fish Strategy (1995). Before implementing this decision, consultation will be carried out with the Fish and Wildlife Service.

Implementation of any alternative would not result in a loss of viability for any fish species within the Forest Planning area.

Roadless Areas

Regulatory Framework

In 1972 the Forest Service began identifying roadless areas for wilderness consideration through the Roadless Area Review and Evaluation (RARE I). In 1979, the agency completed RARE II, a more extensive national inventory of roadless areas. Most national forests and grasslands employed RARE II data to develop inventories of roadless areas. Subsequent forest plan revisions, and some regional assessments have further evaluated inventoried roadless areas.

In 1984 the Washington Wilderness Act (P.L. 98-339) became law. The purpose of the Act was to: 1) designate certain National Forest System lands in the State of Washington as components of the National Wilderness Preservation System and 2) insure that certain other National Forest System lands in the State of Washington be available for nonwilderness multiple uses. The law provided that areas in the State of Washington reviewed under RARE II and not designated as wilderness upon enactment of the Act or identified for special management by the Act were to be managed for multiple use in accordance with land management plans – provided that such areas didn't need to be managed for the purpose of protecting their suitability for wilderness classification prior to or during revision of the initial land management plans. The Idaho Panhandle National Forests Forest Plan states, "Roadless areas will be managed based on the direction and goals established for the respective management area within which they are located." (Page II-4)

The Roadless Area Conservation Final Environmental Impact Statement (FEIS) uses the most recent inventory available for each national forest and grassland. These inventoried roadless areas are identified in a set of inventoried roadless area maps, contained in the Forest Service Roadless Area Conservation Final Environmental Impact Statement, Volume 2, dated November 2000. On January 12, 2001, the Roadless Area Conservation Rule was published in the Federal Register. This rule was to take effect March 13, 2001. Implementation of this rule has been delayed for 60 days. This moves the effective date from March 13, 2001 to May 12, 2001. The rule allows for the continuation of activities associated with reserved or outstanding rights provided by statute or treaty as stated in the Forest Service Roadless Area Conservation FEIS Summary (USDA 2000, p. S-22):

A roadless area is defined as 5000 acres or greater in size or any acreage if contiguous to existing wilderness.

Affected Environment

South Fork Mountain Inventoried Roadless Area

The project area occurs within the South Fork Mountain Inventoried Roadless Area (IRA). Although the project area only encompasses a small portion of the roadless area, for discussion purposes, the entire South Fork Mountain Roadless Area is described.

The South Fork Mountain IRA lies entirely in the State of Washington in Pend Oreille County. It is somewhat circular-shaped area and is largely mountainous timberland, with elevations ranging from 3,200 feet at Sema Meadows to 4,600 feet on the divide between the Pend Oreille drainage and the Priest River drainage. South Fork Mountain Peak lies in the northern part of the IRA (figure 7).

The inventoried acres are approximately 5,400 on National Forest System lands and 1,130 on private lands (all of Sections 3 and 5, and a portion of Sections 7 and 9) for a total of 6,530 acres. While private lands are included in the inventoried acreage for the roadless area, the Forest Service has no management authority for these lands.

The Addendum To Appendix C of the Forest Plan contains detailed information on the South Fork Mountain Roadless Area on pages C-22 through C-31.

Unroaded Area Next To The South Fork Mountain Roadless Area Meeting Roadless Character

On the Forest boundary between the Idaho Panhandle National Forests and the Colville National Forest, next to the South Fork IRA, portions of three contiguous pieces of land form an unroaded area of 1,241 acres. These are lands that were not inventoried as roadless, but contribute to the existing roadless character. The three contiguous pieces are on the Sullivan Lake Ranger District, Colville National Forest. They consist of Section 36, T37N, R44E, a portion of Section 31, T37N, R45E, and Section 6, T36N, R45E, Willamette Meridian.

Grassy Top Inventoried Roadless Area (IRA):

To the north of the South Fork Mountain Roadless Area lies the Grassy Top IRA. It lies entirely in the State of Washington in Pend Oreille County. It is a mixed conifer forest type, which originated as a result of a large fire in the 1920s. The inventoried gross acres are 13,781 on the Idaho Panhandle National Foresst and 2,000 gross acres on the Colville National Forest for a total of 15,781 (figure7).

Sections 1 and 13, T38N, R44E, Willamette Meridian are in private ownership and account for 837 acres within the Grassy Top inventoried roadless area.

The Grassy Top Roadless Area is described on pages C-178 through C-187 of Appendix C of the Idaho Panhandle National Forests, Forest Plan.

Acres No Longer Having Roadless Characteristics

Due to changed conditions over time, several of the sections included within the boundary of the South Fork Mountain IRA no longer meet the roadless characteristics. These are Sections 3, 9 and 10 (table 11).

Sections 3 and 9 belong to Stimson Lumber Company. They have actively managed both parcels for timber management purposes in the recent past. Because of these harvest activities, neither of these sections meets the roadless area characteristics.

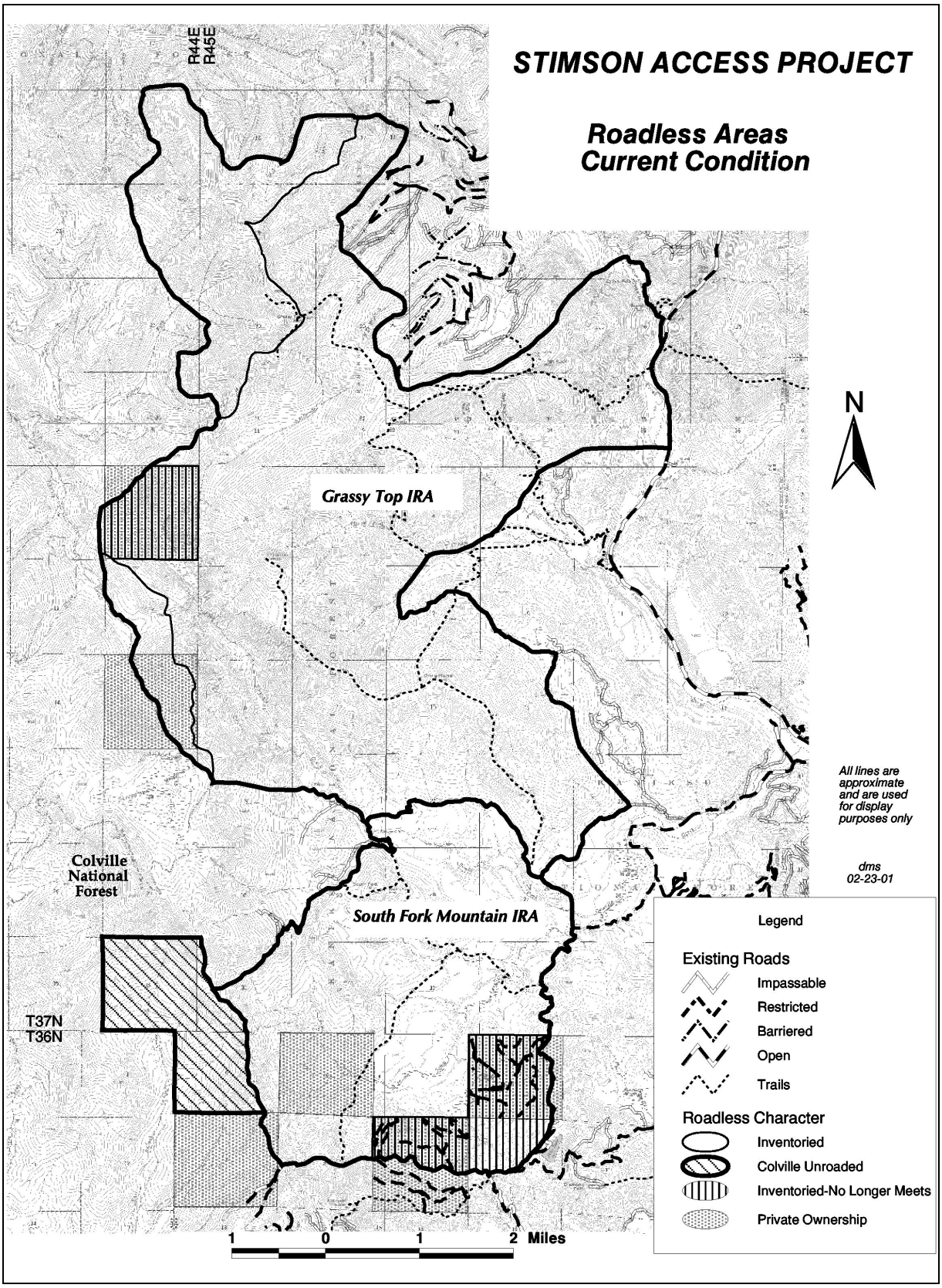

Figure 7. Map showing current condition of the Roadless Areas.

Most of the north half of National Forest Section 10, which is included in the South Fork Mountain IRA, was affected by the management activities by Stimson in Sections 3 and 9. Due to Stimson's activities in Sections 3 and 9, Section 10 is isolated from the remainder of the roadless area that still possesses roadless characteristics and as such no longer meets the roadless character definition.

In addition, Sections 1 and 13, T38N, R44E, Willamette Meridian, which are under private ownership but inventoried in the Grassy Top IRA have been managed and no longer meet roadless character.

Table 12. Acres No Longer Having Roadless Characteristics by IRA (acres)

Location (Ownership)	South Fork IRA	Grassy Top IRA
Section 3 (Stimson)	490	
Section 9 (Stimson)	327	
Section 10 (National Forest)	267	
Section 1 (Stimson)		577
Section 13 (Stimson)		305
Total Acres	**1,084**	**882**

Total Area With Roadless Characteristics:

The Harvey-Granite Road, which is the inventoried northern boundary of the South Fork Mountain IRA was decommissioned (partially obliterated) in 1998. The culverts were removed and the road surface scarified. Decommissioning this road essentially removed the boundary that separated the South Fork Mountain IRA from the adjacent Grassy Top IRA to the north.

Combined, the two IRAs--South Fork Mountain and Grassy Top--along with the unroaded adjacent lands meeting roadless character (Sections 6, 31 and 36), minus the sections that no longer meet roadless characteristics (1,084 acres; table 11), leave 21,586 acres of land meeting roadless characteristics.

Roadless Area Complex:

For discussions in the analysis, the Roadless Area Complex (RAC) will be used as the cumulative effects area. The Roadless Area Complex is defined as follows: The South Fork Mountain IRA, the Grassy Top IRA, along with the existing unroaded areas that are not inventoried as roadless, but meet roadless character definitions.

Following is the gross acreage breakdown for the RAC (refer to figure 7 and table 12):

South Fork Mountain IRA	+ 6,530 acres
Grassy Top IRA	+15,781 acres
Unroaded areas that meet roadless characteristics	+ 1,241 acres
Total area in the RAC	**23,552 acres***

*This includes the areas that no longer meet roadless characteristic.

Existing Roadless Characteristics Descriptions

Roadless Areas are commonly described by six characteristics: Natural integrity, apparent naturalness, remoteness, solitude, special features, and manageability. The following existing characteristics describe the South Fork Mountain Inventoried Roadless Area.

Natural Integrity: The area is predominantly a coniferous forest with a north aspect. Fires in the 1920s and 1930s altered the landscape. Dense immature timber exists with patches of immature timber and underbrush.

The impact from human activity has been related primarily to foot trails. Two trails, 241 and 262, provided access through the area in the past. The trails are still evident in places, however, are no longer maintained as recreation trails. Trail 241 passes through a portion of the project area where the road associated with Alternative B would be constructed. This trail has not been maintained since 1992. The trail tread is in good condition in most places.

Apparent Naturalness: A visitor to the area would feel that he or she is in a natural area away from ordinary human activities and development. Signs of human activities are visible as background only from higher elevations in the area. Currently, forest roads and timber harvest areas are the primary activities visible outside the area.

Remoteness: The area exhibits a feeling of seclusion and inaccessibility due to the dense trees and lack of human-made structures. Road 308 is on the south boundary of the area, but because of low amounts of traffic, the sound of vehicles cannot be heard very often.

Solitude: The area is approximately 3 to 4 miles wide and 4 long miles from north to south. It offers opportunities for solitude because of the differences in topography (3,500 to 4,200 feet in elevation) and vegetation. The higher elevations offer a view of the Pend Oreille and Priest River drainages. South Fork Mountain Peak is the main topographic feature and is accessible by an unmaintained trail.

A high degree of solitude may be found in the project area in its current condition, as there are no areas of concentrated use. One would not expect to find others using the area, so a feeling of isolation could be achieved. The area lies equidistant between two major State highways. Forest Road 308 provides access to the southern boundary of the area.

Special Features: Several unique plant species (refer to plants section) may be found within the project area. The Trail 241 may have been used as a historic pack trail. South Fork Mountain Peak offers viewpoints within and outside of the area.

Manageability/Boundaries Element: The project area is within an inventoried roadless area that is over 5,000 acres in size and thus capable for roadless management. This conclusion is based on an analysis of both manageability and possession of roadless characteristics

Environmental Consequences

Analysis Process

For analysis purposes, the roadless resources were considered in several different ways. For the analysis of direct and indirect effects, only roadless characteristics on National Forest System land within the South Fork Mountain IRA were considered.

The cumulative effects analysis was separated into two parts: for five of the roadless characteristics, those being natural integrity, apparent naturalness, remoteness, solitude and special features, only the South Fork Mountain Roadless IRA was considered.

For discussion of the cumulative effects to the manageability/boundaries characteristic, two levels were discussed:

- The South Fork Mountain IRA only.
- The Roadless Area Complex (RAC) as a whole.

Direct and Indirect Effects

Alternative A:

Direct and Indirect Effects: With the "No Action" Alternative, there would be no change to the existing condition of the roadless resources into the foreseeable future. Trail 241 may continue to receive some level of use. The acres remaining in roadless character in the South Fork Mountain IRA would be 5,446 (table 12).

Alternative B

Direct and Indirect Effects: With implementation of this alternative, approximately 155 acres of roadless character would be lost in Section 8 in the northeast quarter. This would result in a 2.8% reduction in the amount of roadless acres on National Forest land in the South Fork Mountain IRA, leaving 5,291 inventoried acres within this roadless area.

Table 13. Effects of each alternative on the amount of Roadless acres.

Alternative A	South Fork Mtn. Inventoried Roadless Area	Roadless Area Complex
Gross Area:	6,530	23,552
Past Actions: Area currently no longer having roadless characteristics:	(1,084)	(1,966)
Direct and Indirect loss of roadless characteristics:	0	0
Future (reasonably foreseeable) loss of roadless characteristics:	0	(89)
Cumulative Net Area Remaining in Roadless Character:	5,446	21,497

Alternative B	South Fork Mtn. Inventoried Roadless Area	Roadless Area Complex
Gross Area:	6,530	23,552
Past Actions: Area currently no longer having roadless characteristics:	(1,084)	(1,966)
Direct and Indirect loss of roadless characteristics:	(155)	(155)
Future (reasonably foreseeable) loss of roadless characteristics:	(763)	(852)
Cumulative Net Area Remaining in Roadless Character:	4,528	20,579

Alternative C	South Fork Mtn. Inventoried Roadless Area	Roadless Area Complex
Gross Area:	6,530	23,552
Past Actions: Area currently no longer having roadless characteristics:	(1,084)	(1,966)
Direct and Indirect loss of roadless characteristics:	(136)	(136)
Future (reasonably foreseeable) loss of roadless characteristics:	(783)	(872)
Cumulative Net Area Remaining in Roadless Character:	4,527	20,578

Alternative C

Direct and Indirect Effects: With implementation of this alternative, approximately 135 acres of roadless character would be lost in Section 8 in the northeast quarter and 1 acre of roadless character would be lost in Section 4 for a total loss of 136 acres. This would result in a 2.5% reduction in the amount of roadless acres on National Forest land in the South Fork Mountain IRA, leaving 5,310 inventoried acres within this roadless area.

Effects Common to Alternatives B and C

Direct and Indirect Effects - Because of its distance from the project area, no adverse direct or indirect effects would occur to the existing characteristics of the Grassy Top IRA with the implementation of either Alternative B or C.

Cumulative Effects

There are some reasonably foreseeable actions that may occur adjacent to or within the South Fork Mountain IRA in the future that could potentially change the existing roadless character. The reasonably foreseeable actions are:

- Implementation of the Stimson ANILCA Access Easement Final Environmental Impact Statement, Sullivan Lake Ranger District, Colville National Forest, Pend Oreille County, Washington, September, 2000. If this project is implemented, approximately 89 acres on the eastern side of Section 6, T36N, R45E, W.M. would be removed from roadless character due to road construction.

- Potential construction and harvest on Stimson's property in Section 5, T36N, R45E, W.M.

Alternative A

With implementation of this alternative, the current acres in Section 8 would remain roadless. If Stimson does not manage their property in Section 5, the acres in this section would remain in roadless character also and all of the six characteristics (natural integrity, apparent naturalness, remoteness, solitude, special features and manageability), would remain in their current condition, with expected natural changes over time, resulting from such natural disturbances factors as wind, fire and disease.

In addition, with the removal of the Harvey-Granite road, which originally separated the South Fork Mountain Inventoried Roadless Area and the Grassy Top Inventoried Roadless Area, the two Roadless Areas essentially join to form a continuous area that meets the roadless character definition.

It is anticipated that 89 acres in Section 6 on the Colville National Forest would be removed from roadless character in the near future, which would result in a loss of 89 acres. This would leave a total of 21,497 acres in the cumulative effects area (RAC) in roadless character after this action.

Even with the removal of the 89 acres in Section 6, the six roadless area characteristics in the South Fork Mountain IRA would remain as described in the existing conditions section. Approximately 5,446 acres would remain in roadless character in the South Fork Mountain Inventoried Roadless Area (table 12).

Alternative B

With the implementation of this alternative, approximately 155 acres in the north half of Section 8 would be removed from roadless character (figure 8 and table 12). This would result in a 0.7 percent reduction in National Forest roadless acres within the RAC. In addition, the assumption can be made that Stimson will manage their property for long-term timber production. This would then remove Section 5 (558 acres) and the remainder of Section 8 (169 acres) and Section 7 (36 acres) from the roadless character. In addition, the loss of acres from past actions (1084 acres) would leave approximately 4528 acres within the South Fork Mountain IRA.

The six roadless characteristics would be affected as follows, including the assumption that Stimson's lands would be managed for long-term timber production;

Natural Integrity: The majority of the South Fork Mountain IRA would remain as a predominately coniferous forest with dense immature timber and underbrush. The areas viewed from Road 308 and other viewpoints will have a managed condition with evidence of human activities. There will still be areas within the roadless area where the natural integrity will be maintained.

Apparent Naturalness: The area would appear in a managed condition as viewed from the Road 308 and other viewpoints within the South Fork Mountain IRA. Human modification would be apparent in Section 5 where management activities occur. There will be other areas and viewpoints, however where naturalness can still be found.

Remoteness: The area would exhibit less of a feeling of seclusion and inaccessibility due to human disturbances, such as the road through Section 8 and activities on Section 5. Vehicular traffic sounds would be heard during road construction on Section 8 and when management activities are occurring in Section 5. This could be expected to be continuous during initial construction, then taper off once the road construction is complete and initial harvest activities have occurred in Section 5. These sounds would not be apparent throughout the entire roadless area and places with a remote feel could still be found.

Solitude: A high degree of solitude could still be found within the South Fork Mountain IRA, except if one were in Sections 8 or 5 during times of road construction or management activities when people and equipment would be present. Because the road would be closed to motorized vehicles, a feeling of isolation could still be found in Sections 8 and 5. In other parts of the roadless area, solitude could be found even during times of construction and management activities.

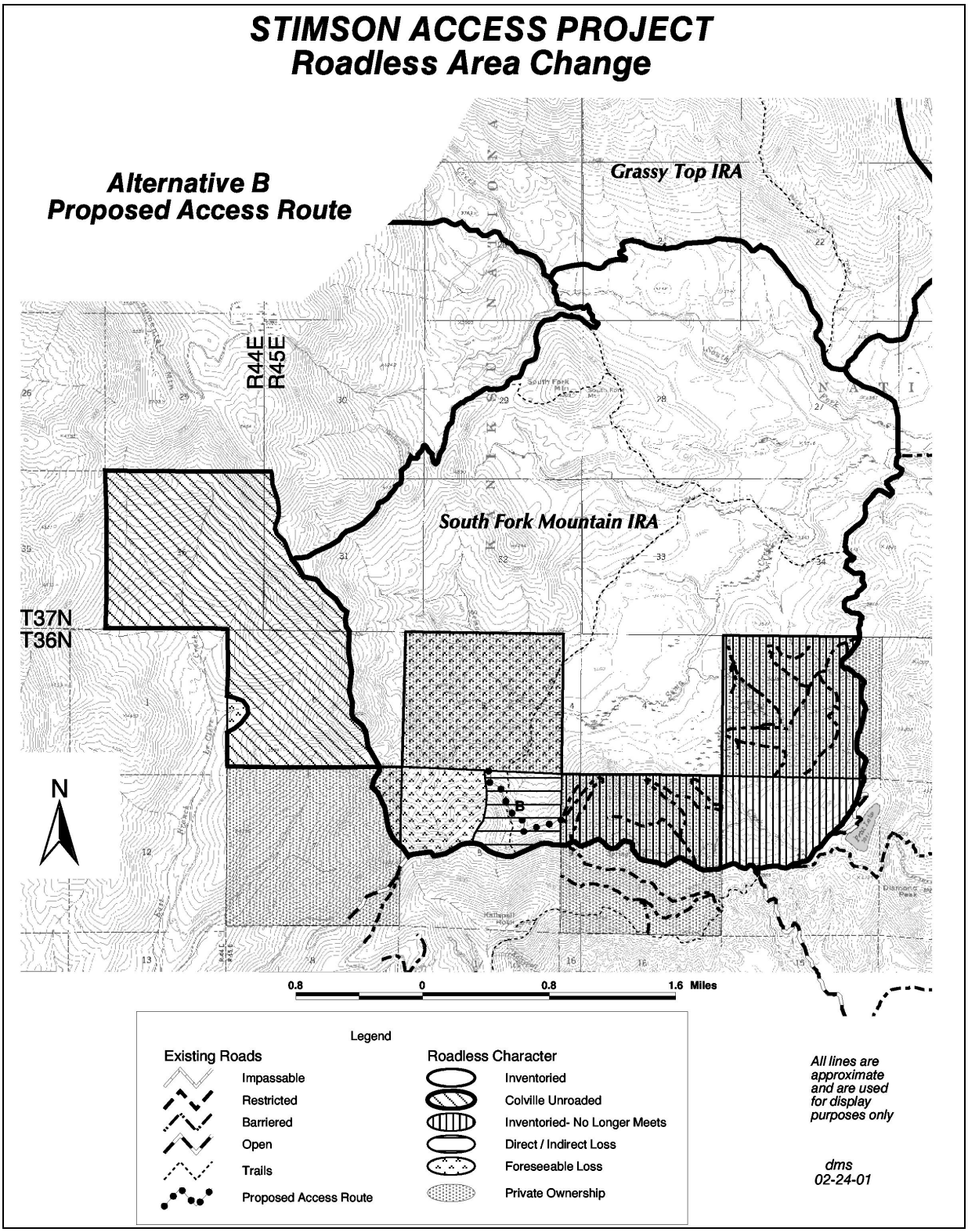

Figure 8. Roadless Area change with Alternative B.

Special Features: Where the road through Section 8 crosses Trail 241, the trail location would be marked on either side of the road, so this special feature could still be found. Any special features in Section 5, including Trail 241 may or may not be preserved depending on Stimson's management activities. Unique plant species would still be found in the roadless area where they exist (refer to plant section). Other special features, such as South Fork Mountain Peak, would be physically unaffected by management activities.

Manageability/Boundaries Element: With the cumulative impacts from activities occurring in Section 8 and Section 5, the acres from both of these sections would no longer meet roadless characteristics. The remaining South Fork Mountain IRA, including Section 4, along with the Grassy Top IRA to the north, would continue to meet roadless area characteristics.

In addition, it is anticipated that the acres in Section 6 on the Colville National Forest would be removed from roadless character in the near future, which would result in a loss of 89 acres. This would leave a total of 20,579 acres in roadless character within the larger contiguous roadless area (RAC) after this action.

The manageability of the cumulative effects area could be further broken out as follows:

- South Fork Mountain IRA: 4,528 acres total
- RAC: 20,579 acres total.

Although the acreage for the South Fork Mountain IRA would drop below 5,000 acres, this is due to the activities on private land. The remainder of the roadless characteristics would remain intact.

Alternative C

With the implementation of this alternative, approximately 135 acres in Section 8 and 1 acre in Section 4 would be removed from the roadless character. This would result in a 0.6 percent reduction in National Forest acres within the RAC. In addition, the assumption can be made that Stimson will manage their property for long-term timber production. This would then remove Section 5 (558 acres), the remainder of Section 8 (189 acres) and Section 7 (36 acres) from the roadless character. In addition, the loss of acres from past actions (1,084 acres) would leave approximately 4,527 acres within the South Fork Mountain IRA (figure 9 and table 12).

The six roadless characteristics would be described as follows:

Natural Integrity: The majority of the South Fork Mountain IRA would remain as a predominately coniferous forest with dense immature timber and underbrush.
The areas viewed from Road 308 and other viewpoints would have a managed appearance with evidence of human activities. There will still be areas within the roadless area where the natural integrity would be maintained.

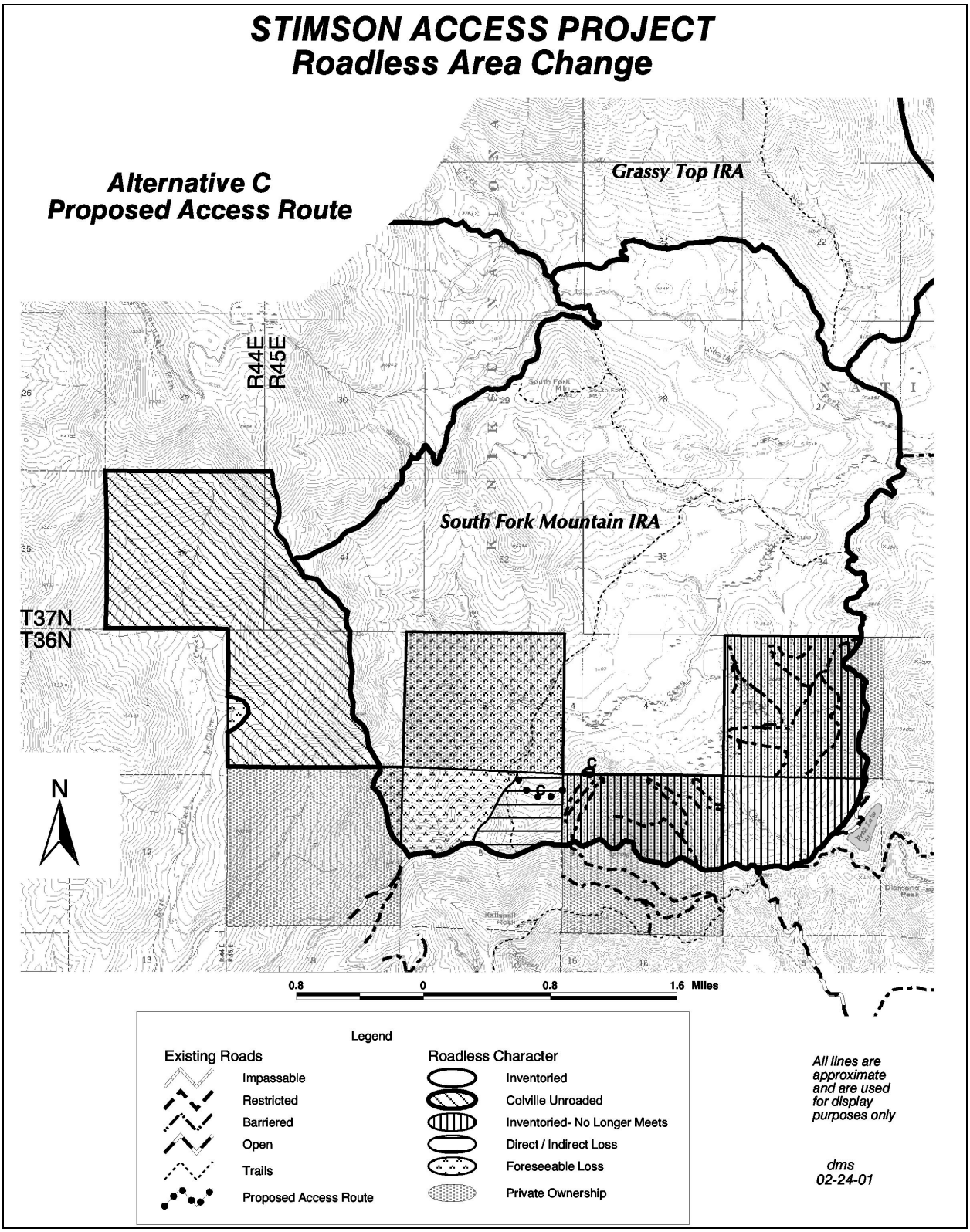

Figure 9. Change in Roadless Area with Alternative C.

Apparent Naturalness: The area would appear in a managed condition as viewed from the Road 308 and other viewpoints within the South Fork Mountain IRA. Human modification would be apparent in Section 5, Section 8, and the southwest corner of Section 4 where the easement would occur. There would be other areas and viewpoints, however where naturalness can still be found. This naturalness will occur within the remainder of the South Fork Mountain IRA.

Remoteness: Certain areas would exhibit less of a feeling of seclusion and inaccessibility due to human disturbances, such as the road through Section 8, Section 4, and activities on Stimson Lumber Company in Section 5. Vehicular traffic sounds would be heard during road construction on Sections 8 and 4, and when management activities are occurring on Section 5. This could be expected to be continuous during initial construction, and then taper off once the road construction is complete and initial harvest activities have occurred in Section 5. These sounds would not be apparent throughout the entire roadless area and places with a remote feel could still be found.

Solitude: A high degree of solitude could still be found within the South Fork Mountain IRA, except if one were in Sections 8, 4, or 5 during times of road construction or management activities when people and equipment would be present. Because the road would be closed to motorized vehicles, once construction and management activities are complete, a feeling of isolation could still be found in Sections 8, 4 and 5. In other parts of the roadless area, solitude could be found even during times of construction and management activities.

Special Features: Any special features in Section 5, including Trail 241 may or may not be preserved depending on Stimson's management activities. Unique plant species could still be found in the roadless area where they exist, including Sections 8 and 4 (refer to plant section). Other special features, such as South Fork Mountain, would be physically unaffected by management activities.

Manageability/Boundaries Element: With the cumulative impacts from activities in Section 8 and Section 5, the acres from both of these sections would no longer meet roadless characteristics. A small portion of Section 4 would be effected in its southwest corner, accounting for approximately 872 acres that would no longer meet roadless character. The remaining inventoried acres of the South Fork Mountain IRA, along with the Grassy Top IRA to the north, would continue to meet roadless area characteristics and account to a total of 20,578 acres.

It is anticipated that the acres in Section 6 on the Colville National Forest would be developed in the near future, which would result in a loss of 89 acres. This would leave a total of 20,578 acres in roadless character after this action.

The manageability of the cumulative effects area could be further broken out as follows:

- South Fork Mountain IRA: 4,527 acres total
- RAC: 20,578 acres total.

Although the acreage for the South Fork Mountain IRA would drop below 5,000 acres, this is due to the activities on private land. The remainder of the roadless characteristics would remain intact.

Consistency With the Forest Plan and Other Regulatory Direction

With implementation of either Alternative B or C, Forest Plan consistency would be met. This conclusion is based on the fact that even though the total acres in the South Fork Mountain IRA would drop below 5,000, the action is consistent with the direction in the IPNF Forest Plan, which is to manage roadless areas according to the management area direction allocated within each individual roadless area. Implementation would also be consistent with the Washington Wilderness Act and ANILCA.

Threatened, Endangered, Sensitive, and Rare Plants

Regulatory Framework

There are no Federally listed Endangered plant species suspected to occur in the Idaho Panhandle National Forests (IPNF) or in the project area.

A Threatened species, as determined by the US Fish and Wildlife Service, is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Currently, two Threatened species are suspected to occur in the IPNF, water howellia (*Howellia aquatilis*) and Ute ladies'-tresses (*Spiranthes diluvialis*). One species proposed for listing as threatened, Spalding's catchfly (*Silene spaldingii*) is suspected to occur in the IPNF.

Sensitive species are determined by the Regional Forester as those species for which population viability is a concern, as indicated by a current or predicted downward trend in population numbers or habitat capability which would reduce the species' existing distribution (FSM 2670.5). Several Forest species of concern are also considered; while they are generally not at risk on a rangewide, region-wide or state level, they may be imperiled at the Forest level. Seventy-six sensitive plant species and Forest species of concern are known or suspected to occur in the Kaniksu portion of the IPNF, which encompasses the Stimson Access project area.

Sensitive species and Forest species of concern may be assigned to one or more habitat guilds. These guilds are artificial assemblages based on similar habitat requirements and are used to streamline analysis. A list of TES plant species by habitat guild and guild descriptions are included in the Project File.

Affected Environment

Methodology and Prefield Review

Assessment of sensitive species, Forest species of concern and suitable habitat occurrence was accomplished through review of Priest Lake Ranger District Sensitive Plant Atlas (USDA 2000), Washington Natural Heritage Program Element Occurrence Records, National Wetlands Inventory maps, queries of the timber stand data base (TSMRS), aerial photographs and topographical maps, previous sensitive plant surveys, personal knowledge and professional judgment of the North Zone Botanist.

Field Survey Results and Post-Survey Review

Field surveys of the proposed easement under Alternative B were conducted in August of 1995. Surveys of the easement proposed under Alternative C were accomplished in 1997. One occurrence of **deerfern** (*Blechnum spicant*) and one occurrence of **western goblin** (*Botrychium montanum*) were discovered in the 1995 survey. Based on the results of that field survey, the proposed easement under Alternative B was relocated away from the sensitive plant populations. Two occurrences of western goblin and **Mingan moonwort** (*B. minganense*) were identified during the 1997 survey.

Much of the project area is characterized by dense second-growth mixed conifer forest, with scattered pockets of older fire-scarred trees. Small benches and swales and riparian zones harbor moist or wet forest plant habitats; the sensitive plant occurrences were found in these microsites. Both proposed easements cross two drainages with well-developed riparian zones, but no sensitive plants were found there. All highly suitable habitat was thoroughly surveyed.

Field survey results and habitat assessment TSMRS queries were reviewed after the listing as Threatened of Ute ladies'-tresses (December 1998), the revision of the Regional Forester's Sensitive Plants list (March 10, 1999) and the proposal to list Spalding's catchfly (December 1999). It was determined that no further field surveys were necessary.

Complete results of field surveys are included in the Project File.

Species Screen

The Council on Environmental Quality (40 CFR 1502.2) directs that impacts be discussed in proportion to their significance. Generally, the following guidelines are used for determining the appropriate level of analysis:

No detailed analysis is necessary for species or habitat presumed not to be present within the affected area. Full disclosure of supporting rationale is included in the Project File. No potential habitat for the Threatened species water howellia or Ute ladies'-tresses or the proposed Threatened Spalding's catchfly occurs in the project area. Of sensitive species and Forest species of concern, no suitable habitat for aquatic, deciduous riparian, peatland, dry forest,

subalpine or cold forest guild species is present in the project area. These habitat guilds will not be discussed further.

Species or habitat considered present and potentially affected by the proposed actions are carried forward into a detailed discussion and analysis in the Environmental Consequences Section. Suitable habitat for deerfern, sensitive moonworts and other moist forest and wet forest guild sensitive species and Forest species of concern has been documented in the project area, and may be impacted by project activities. These species and habitats will be analyzed in detail.

Moonworts *(*Botrychium *species)*

Moonworts are seedless vascular plants that reproduce from spores and underground rhizomes. Mingan moonwort (*B. minganense*) and western goblin (*B. montanum*), both of which were identified in the project area, often occur with other rare moonworts, usually in wet or moist forest habitat and/or near streams and in soils with well-developed soil mycorrhizae[1]. Mingan moonwort may also occur with other rare moonworts in or adjacent to wet meadows, open disturbed areas, old roads and roadside ditches.

One historical occurrence of the Forest species of concern slender moonwort (*Botrychium lineare*) is documented from the IPNF approximately twelve miles northeast of the project area but has not been seen since 1925. No new occurrences of slender moonwort have been identified in the IPNF during numerous surveys in which other rare moonworts were documented. Highly suitable habitat for this species occurs in the project area near stream crossings under both action alternatives and in microsites of wet forest habitat associated with Alternative C.

Deerfern *(Blechnum spicant)*

In eastern Washington and northern Idaho, deerfern is disjunct, or separated, from the main range of the species. It is common in coastal forests west of the Cascade Mountains but rare throughout the inland northwest. Plants typically grow in shady, moist mature forests, but appear to tolerate limited soil disturbance and canopy removal (Blake and Ebrahami 1992). There are no current threats to the deerfern plants in the project area. Potential threats are similar to those described for moonworts, except that deerfern appears more tolerant of canopy removal, and appears to establish in disturbed mineral soils (Hammet 1997; Penny 1995; Blake and Ebrahami 1992).

Environmental Consequences

Analysis Process

Analysis was conducted using results of TES plant surveys, current population distribution of TES species and Forest species of concern in the analysis area and professional judgment. The cumulative effects analysis area includes the Sema and Tobasco Creek watersheds. Past management activities on private and Federal lands in the watersheds were considered in the

[1] Mycorrhizae are symbiotic relationships between fungi and the roots of certain plant species. Although their ecology is poorly understood (Lellinger 1985; Vanderhorst 1997), it is apparent that mycorrhizal relationships enhance uptake of nutrients by the host plant (Allen 1991).

analysis of cumulative effects. The following reasonably foreseeable activities were also considered:

- **Timber harvest and road construction** on Stimson lands in the parcel to which access is requested
- **Ongoing road maintenance** on Stimson and Federal lands in the watersheds
- **Noxious weed treatment** on Stimson and Federal lands in the watersheds

The majority of National Forest lands in the Sema and Tobasco Creek watersheds have had no management activities, and none are planned other than road maintenance and noxious weed treatment as noted above.

Cumulative effects analysis on private lands was based on aerial photograph and topographical map interpretation and on the assumption that highly suitable habitat for sensitive plants occurs on private lands in similar proportion to that on Federal lands. It was further assumed that at least some suitable habitat is or was occupied by sensitive plant species.

Cumulative effects to sensitive plant species or suitable habitat are generally described as follows:

- **very low** - no measurable effect on individuals, populations or habitat
- **low** - individuals and/or habitat not likely affected
- **moderate** - individuals and/or habitat may be affected, but populations would not be affected, and habitat capability would not over the long term be reduced below a level that could support sensitive plant species
- **high** - populations would likely be affected and/or habitat capability may over the long term be reduced below a level that could support sensitive plant species

Effects Common to Alternatives B and C

Sensitive moonworts *(*Botrychium *species)*

Direct and Indirect Effects - Undetected individuals of Mingan moonwort and western goblin in marginal to moderately suitable habitat could be impacted under either action alternative.

Cumulative Effects - Because of the likelihood of impacts to individuals, implementation of either action alternative would contribute moderate cumulative impacts to sensitive moonworts. However, because of the scope of the proposed actions and with measures designed to protect documented sensitive moonwort occurrences, impacts from either action alternative by itself would not be significant when considered at the watershed scale.

Past logging and road construction activities on private lands in the analysis area have likely impacted individuals, and have certainly impacted suitable habitat for these species. Planned timber harvest activities on private lands are expected to continue to impact some suitable habitat, with the possibility that some moonwort occurrences may be lost. Ongoing road maintenance and noxious weed treatment are not expected to contribute to cumulative impacts.

Cumulative impacts to sensitive moonworts in the analysis area would be expected to be moderate. Although occurrences may be lost, overall population viability and habitat capability in the analysis area would not be reduced below a level that could support sensitive moonworts.

***Deerfern** (Blechnum spicant)*

Direct and Indirect Effects - After sensitive plant field surveys were conducted in 1995, the proposed road location under Alternative B was changed to avoid the deerfern and its habitat by at least 200 feet. This species was not found during surveys of the easement proposed under Alternative C. There would be no direct or indirect impacts to this species from implementation of either action alternative.

Cumulative Effects - Because of the scope of the proposed actions, and with proposed road locations designed to avoid the documented deerfern occurrence and most highly suitable habitat for this species, implementation of either action alternative would not, by itself, contribute significant cumulative impacts to deerfern.

Past logging and road construction activities on private lands in the analysis area have impacted suitable habitat for this species, and some individuals may have been impacted. Planned timber harvest activities on private lands are expected to continue to impact some suitable habitat, with the possibility that some deerfern occurrences may be lost. Because deerfern has been found to colonize disturbed mineral soils (see Affected Environment), populations may persist and even expand in some previously harvested areas. Overall cumulative effects to the species and its habitat in the analysis area would be expected to be moderate.

Moist Forest Habitat

Direct and Indirect Effects - Areas of marginally suitable **moist forest** habitat (characterized by immature mixed-conifer forest) would be directly impacted under either action alternative. The loss of suitable habitat would not be significant (0.3 acre under Alternative B and 1.0 acre under Alternative C). With implementation of features designed to minimize weed introduction and spread (see Chapter II, Features Common to Alternatives B and C), habitat degradation from noxious weeds is not expected to occur.

Cumulative Effects - Because of the small amount of moist forest habitat that would be affected, implementation of either action alternative would not, by itself, contribute significant cumulative impacts to most sensitive species of this guild. Past logging and road construction activities on private lands in the analysis area have impacted suitable moist forest habitat, and likely some sensitive species of this guild. Planned timber harvest activities on private lands are expected to continue to impact species and suitable habitat. Overall cumulative impacts to moist forest guild habitat and species in the analysis area would be expected to be moderate.

Wet Forest Habitat

Direct and Indirect Effects - A small amount of **wet forest** habitat at the two perennial stream crossings and at several intermittent stream crossings would be directly impacted. The loss of suitable habitat would not be significant (0.1 acre under either action alternative). With implementation of features designed to minimize weed introduction and spread (see Chapter II,

Features Common to Alternatives B and C), habitat degradation from noxious weeds is not expected to occur.

Cumulative Effects - Because of the small amount of wet forest habitat that would be affected, implementation of either action alternative would not, by itself, contribute significant cumulative impacts to most sensitive species of this guild. Past logging and road construction activities on private lands in the analysis area have impacted suitable wet forest habitat, and likely some sensitive species of this guild. Planned timber harvest activities on private lands are expected to continue to impact species and suitable habitat. Stream buffers on private lands are probably adequate to protect most occurrences of sensitive plants that occur there from direct impacts. However, those buffers may not be sufficient to prevent impacts to individuals or indirect effects. Overall cumulative impacts to wet forest guild species and habitat in the analysis area would be expected to be moderate.

Forest Species of Concern

Slender moonwort (Botrychium lineare*)*

Direct and Indirect Effects - Based on current knowledge of the species' distribution, impacts to this Forest species of concern would not be expected to occur from implementation of either action alternative. Although many occurrences of other sensitive moonworts have been identified in numerous surveys since 1989, slender moonwort has not been documented since 1925. No direct or indirect impacts to slender moonwort would be expected to occur.

Cumulative effects to habitat for slender moonwort would be predicted to be the same as for moist and wet forest habitat.

Alternative A

Under this No Action alternative, there would be no direct, indirect or cumulative impacts to any threatened, endangered or sensitive plant species or Forest species of concern or suitable habitat, since management activities would not change from current levels.

Alternative B

Direct and Indirect Effects - The easement proposed under this alternative would not directly or indirectly impact any documented sensitive plant species. The original easement location was revised in 1995 to avoid the moonwort and deerfern plants found that year. The revised location is between 200 and 250 feet upslope from the plants, separated by a topographic break (Layser 1997). As a result, the proposed easement location would avoid the highly suitable moist forest and wet forest habitat in benches and swales found on the lower slopes.

Alternative C

Direct and Indirect Effects - Under this alternative, one documented occurrence of sensitive moonworts (*Botrychium minganense* and *B. montanum*) would fall within the 66-foot easement. The moonwort occurrence is localized within a moist forest microsite under a relic cedar

overstory, and this microhabitat would be buffered from any disturbance. An attempt would be made to relocate the proposed easement to provide a minimum 100-foot buffer from any road construction activity. If the easement location cannot be moved, the plants would be buffered from any soil disturbance or canopy removal, but this buffer would be less than 100 feet. No direct effects to the sensitive moonworts would occur.

However, it is likely that the buffer would not be sufficient to preclude at least some alteration of environmental conditions (shade, moisture and/or temperature) from "edge effect". Moonworts appear to tolerate a range of environmental conditions (Vanderhorst 1997), and populations of some sensitive moonworts are known along roadsides and other highly disturbed habitats (ICDC 2000). Although this alternative would indirectly affect the habitat of a known sensitive moonwort occurrence, a loss of population viability or trend to Federal listing would not be expected.

Areas of highly suitable **moist forest** habitat would be directly impacted under this alternative. The risk that undetected moonworts would be impacted, and that available habitat for documented occurrences would be reduced, is higher than under Alternative B. Although implementation of Alternative C would likely impact individual sensitive moonworts and their habitat, the impact would not cause a loss of population or species viability or a trend to Federal listing. The direct loss of highly suitable habitat under this alternative is not significant given the amount of such habitat in the analysis area.

Consistency With the Forest Plan and Other Regulatory Direction

A Forest Plan management goal is to “manage habitat to maintain populations of identified sensitive species of animals and plants” (Forest Plan, II-1). A Forest Plan standard for sensitive species is to “manage the habitat of species listed in the Regional Sensitive Species List to prevent further declines in populations which could lead to Federal listing under the Endangered Species Act” (Forest Plan, II-28). The Forest Plan also identifies the need to “determine the status and distribution of Threatened, Endangered and Rare (sensitive) plants on the IPNF” (Forest Plan, II-18). All alternatives would meet Forest Plan direction.

Noxious Weeds

Introduction

The impacts of noxious weed invasions on forest resources and the effectiveness and impacts of different weed treatment methods are discussed in the Priest Lake Noxious Weed Control Project Final Environmental Impact Statement (FEIS) (USDA 1997), hereby incorporated by reference. Information on current weed infestations and results of weed management in and adjacent to the project area are derived from monitoring and treatment reports provided by the district weed coordinator (Layser 2001).

Affected Environment

Noxious and undesirable weeds are currently infesting several sites adjacent to the project area. Spotted knapweed, meadow hawkweed, goatweed, Canada thistle and oxeye daisy occur along Forest Road 308 on National Forest and privately owned lands. Infestations on National Forest lands adjacent to the project area have been managed for the last three years, using an Integrated Pest Management approach that includes hand-pulling and chemical treatments. Continued monitoring and management of weeds are planned, based on district priorities and availability of funding. Copies of recent monitoring and treatment reports are located in the Project File.

The easements proposed under both alternatives would be spurs off of roads owned and maintained by Stimson. Those roads are currently managed for noxious weeds using mechanical, chemical, and cultural control methods (Opp 2001).

Environmental Consequences

Methodology

The analysis of effects with regard to weed infestations was conducted using guidelines in the Priest Lake Noxious Weed Control Project Record of Decision (ROD) and FEIS (USDA 1997), results of past monitoring and treatment of weeds in and near the project area and professional judgment. The cumulative effects area for noxious weeds includes Sema and Tobasco Creek watersheds.

Effects Common to Both Action Alternatives

Direct and Indirect Effects - There is a risk of weed introduction and spread with road construction. Preventive seeding of native and desired non-native species on all areas disturbed during road construction would reduce, but not eliminate, the risk of spread. Yearlong restrictions on motorized use of the road as proposed would greatly reduce the risk of noxious weed introduction.

Implementation of mitigation measures would reduce the incidence of weed introduction and spread along either proposed easement. The private landowner would be required to monitor and treat weeds along the newly constructed road segment for a three-year period following use of the road (see Chapter II, Features Common to Alternatives B and C). Monitoring and treatment would greatly reduce the risk of establishment of noxious weeds along the road, either from new introductions or from spread of current infestations.
Implementation of either action alternative would not contribute significant direct or indirect effects to the incidence of noxious weed infestation in the Sema or Tobasco Creek watersheds.

Cumulative Effects - With the proposed design criteria and mitigation measures, implementation of either of the action alternatives would not, by itself, contribute significant cumulative effects to weed infestations. In addition to the action alternatives, the following

reasonably foreseeable actions were considered in the cumulative effects analysis for noxious weeds:

Timber harvest and road construction activities on private lands: With the implementation of either action alternative, the private landowner would conduct road construction and timber harvest activities in the parcel to which access is being requested. Road construction and timber harvest on private lands within the analysis area would be expected to increase susceptibility to invasion of weed species on private lands. It is assumed that most noxious weed species that occur on Federal lands in the analysis area also occur on private lands. Noxious weeds could be introduced on logging equipment. While the incidence of weed infestation in the watersheds is low overall, existing infestations could spread to newly disturbed areas (such as skid trails and skyline corridors) on private lands. Cumulative effects to noxious weed infestations would be expected to be low to moderate, depending on the landowner's diligence in preventing weed spread in harvested areas.

Road maintenance: Ongoing road maintenance of private and Forest roads would create soil disturbance that is conducive to weed spread. Monitoring and treatment of infestations as proposed on both National Forest (USDA 1997) and private (Opp 2001) lands would reduce the risk of weed spread and establishment of new weed invaders along the roads. Cumulative effects to weed spread from this activity would be low.

Noxious weeds control on private and National Forest lands: Current noxious weed control practices on private and Federal lands are expected to continue (see Chapter III, Noxious Weeds). On National Forest lands, noxious weed control would be conducted according to guidelines in the Priest Lake Noxious Weed Control Project ROD and FEIS (USDA 1997). Weed monitoring and control efforts are expected to continue to reduce the incidence of infestations. Long-term benefits are expected to accrue.

Alternative A

Under the No Action alternative, there would be no change in the risk or rate of weed spread, since management practices would not change from current conditions.

Alternative B

Because this proposed easement is longer than that under Alternative C, the amount of disturbance, and, therefore, the amount of habitat susceptible to weed invasion, would be greater than under Alternative C. The significance of this difference is expected to be reduced by design criteria and mitigation measures as proposed in Chapter II, Features Common to Alternatives B and C.

Alternative C

Because this proposed easement is shorter than that under Alternative B, the amount of disturbance, and, therefore, the amount of habitat susceptible to weed invasion, would be less than under Alternative B. The significance of this difference is expected to be reduced by design

criteria and mitigation measures as proposed in Chapter II, Features Common to Alternatives B and C.

Consistency With the Forest Plan and Other Regulatory Direction

According to current Forest Plan direction, infestations of many noxious weed species, including knapweed, goatweed and common tansy, are so widespread that eradication would require major programs that are not possible within expected budget levels (Forest Plan p. II-7). The No Action alternative meets Forest Plan direction by not creating disturbance conducive to new noxious weed invasions or spread of existing weed populations. Both action alternatives provide moderate control actions, as required by the Forest Plan, to prevent new weed species from becoming established, through project design, and through monitoring and treatment as specified in Features Common to Alternatives B and C.

Soils

Methodology

Soil productivity is the output of a specified plant or group of plants under a defined set of management practices, or total plant mass produced annually per unit area. Soil productivity is influenced by such factors as parent material, topography and soil texture.

The discussion of soils and soil productivity is restricted to a simple comparison of the amount of National Forest lands that would be removed from productivity from the action alternatives and the reduction in current soil productivity on federal and private lands from reasonably foreseeable actions. Therefore, a detailed analysis of current soil productivity in the proposed easements was not considered necessary. The implications of road construction on different soil types in the project area related to erosion and other detrimental processes are fully discussed in Chapter III, Hydrology.

Effects to soil productivity from the action alternatives were measured by the acres affected by proposed road construction under each alternative. Past activities, as well as future road construction and timber harvest by Stimson were considered in the analysis of cumulative effects. There are no reasonably foreseeable actions on National Forest lands in the cumulative effects analysis area that would substantially affect soil productivity. The cumulative effects area includes all of the Sema Creek drainage to its confluence with the South Fork of Granite Creek. The Sema Creek drainage represents the expected limits of effects to soil productivity from the action alternatives and reasonably foreseeable actions.

Affected Environment

Soils in the proposed easements are currently in a natural state (i.e. they are undisturbed because no management activities have occurred there). In their natural state, some soils are more productive than others, based on environmental factors as described above.

Environmental Consequences

Alternative A

Implementation of the no action alternative would mean that neither road access alternative would be implemented. There would be no change in current soil productivity conditions, since management activities would not change. No direct, indirect or cumulative effects would occur.

Alternative B

Direct and Indirect Effects - Under this alternative, approximately 4,000 feet of road would be constructed. The road prism and areas of cut and fill would be permanently taken out of productivity. Approximately six acres of National Forest lands would be directly impacted.

Alternative C

Direct and Indirect Effects - Under this alternative, approximately 2,500 feet of road would be constructed. The road prism and areas of cut and fill would be permanently taken out of productivity. Approximately 3 acres of National Forest lands would be directly impacted. Under this alternative, approximately 1,250 feet of additional road would be constructed on Stimson land to enable access to this easement location; as a result, approximately 2 acres of private lands would be permanently removed from productivity.

Effects Common to Alternatives B and C

Cumulative Effects - The permanent road construction proposed in either alternative would be an irretrievable commitment of soil productivity potential within the road corridor (i.e. lands from the top of cut slope to the toe of the road fill will be taken out of production).

Because of the scope of the proposed actions, implementation of either action alternative by itself would not contribute significant cumulative effects to soil productivity. Past activities in the cumulative effects analysis area have resulted in some loss of soil productivity; these effects have occurred almost entirely on private lands. Further timber harvest and road construction on Stimson-owned property in upper Sema Creek would be expected to reduce soil productivity on those lands. However, no further impacts to soil productivity on National Forest lands would be expected to occur.

Consistency With the Forest Plan and Other Regulatory Direction

According to the Forest Plan, management activities on National Forest lands will not significantly impair the long-term productivity of the soil (Forest Plan, p. II-8). A Forest Plan standard is to maintain at least 80 percent of the activity area in a condition of acceptable productivity potential for trees and other managed vegetation (Forest Plan, p. II-32). That standard was revised to 85 percent in 1999 (R1 Supplement to FSM 2500-99-1). The revision also stated that, while permanent roads do affect soil-hydrologic function, their evaluation is more appropriate in a watershed analysis context than from a soil productivity standpoint.

All alternatives would meet Forest Plan standards and guidelines, as revised, for soil productivity on National Forest lands.

Recreation

Regulatory Framework

When the Forest Plan was developed in 1987, the Recreation Opportunity Spectrum (ROS) was used to define the types of outdoor recreation opportunities the public might desire and identify that portion of the spectrum a given National Forest might be able to provide. The ROS is used for planning and managing the recreation resource and recognizes recreation activity, setting, and experience opportunities. The project area was classified as Roaded Natural and Semi-Primitive Motorized.

Affected Environment

For the Recreation analysis, Forest Road 308 is the southern boundary of the project area, however, for discussion purposes, several destination areas that are outside the boundary of the project area are included.

The area surrounding the project area receives a moderate amount of dispersed recreation use, including huckleberry and mushroom picking, hunting, and scenic drives. Forest Road 308 acts as the main route through the area and to destinations such as Petit Lake and the trailhead to Kalispell Rock. Road 308 is the only open road near the area. The other roads are gated and restricted from motorized use. The only trail maintained for recreation purposes near the area is the Kalispell Rock Trail 370. Most recreation use occurs along the road corridors.

Trail 370 to Kalispell Rock is open to non-motorized use and has been closed with a guardrail barrier. The trailhead is on the south side of Road 308 and approximately one mile from the project area in Section 8. There is a gate on Stimson Lumber Company's property in Section 9. This gate is maintained as a year-round closure. Some ATV and motorcycle use occurs on road 308 along with traditional vehicles.

One outfitter is permitted in this area for providing guided elk, deer, bear, and cougar hunting trips.

Snowmobiling also occurs to the south of the project area, along the 308 road, however, the road is not part of the groomed trail system and snowmobilers are not encouraged to use this area, as it is a moose winter range.

Change in ROS Classification

In 1987, the Sema Creek Trail 241 was classified as motorized and connected to Trail 262, the South Fork Mountain trail, which was maintained as a fire access trail and was open to motorized use.

In 1995, with the implementation of the Kalispell-Granite Grizzly Bear Access Management project, a project designed to protect grizzly bear habitat, Trail 241 was removed from the maintained public trail system and was converted to a fire access trail. Trail 241 crosses Stimson property in Section 5, however, the Forest Service never obtained an easement for the trail. Trail 262 remained a fire access trail. Both trails are for non-motorized use. The trail signs were removed and the trails were not listed on the District Travel Plan Map or any trail guides. The trails continue to receive a low level of maintenance, basically the amount necessary for fire fighting access purposes.

With the status of Trail 241 and Trail 262 changing from motorized to non-motorized use through the Kalispell-Granite Grizzly Bear Access Management project, the ROS classification for the area changed from Semi-Primitive Motorized to the existing condition of Semi-Primitive Non-Motorized. (Refer to maps in the project file)

Primitive Recreation Opportunities within the South Fork Mountain Roadless Area:

The roadless area offers primitive opportunities for hiking, backpacking, hunting big and small game, and viewing scenery. Most activities consist of day use because of the size of the area and camping can occur on dispersed sites along forest roads adjacent to the area. The current recreation use is low.

Environmental Consequences

The following will disclose the direct, indirect and cumulative effects of each of the alternatives. The direct and indirect effects will be discussed first, then cumulative will be discussed in a separate section.

Alternative A

Direct Effects and Indirect Effects: With the implementation of this alternative, no direct effects to the existing recreation resources would occur. Dispersed recreation use would be expected to remain at close to existing levels for the foreseeable future.

A very low level of use may occur on Trail 241 by people who know the trail exists. Over time even less use would be expected to occur on Trail 241 as it becomes more brushed in and the trailhead becomes less obvious.

The ATV and motorcycle use that occurs on Road 308, the use by the outfitter, and snowmobiling that occurs south of the project area along Road 308 would all be expected to stay at the same level.

Alternative B

Direct Effects and Indirect Effects: A slight increase in dispersed use may occur if people access the area using the road by non-motorized means. In order to access this road, the public

would have to access Stimson's property in Section 9 and travel along an existing gated road. Use of Trail 241 would not be expected to increase even though this route would cross the trail.

The ATV and motorcycle use that occurs on Road 308, use by the outfitter, and snowmobiling that occurs south of the project area along Road 308 would be expected to stay at the same level.

Alternative C

Direct Effects and Indirect Effects: A slight increase in dispersed use may occur if people access the road by non-motorized means. In order to access this road, the public would have to access Stimson's property in Section 9 and travel along an existing gated road. Trail 241 would not be crossed with this alternative.

The ATV and motorcycle use that occurs on Road 308, use by the outfitter, and snowmobiling that occurs south of the project area along Road 308 would be expected to stay at the same level.

Cumulative Effects:

Alternative A: With the implementation of Alternative A, recreation use would be expected to remain close to existing levels.

Alternatives B and C: With the implementation of either Alternative B or C, a slight increase in use may occur over time as people discover the non-motorized road system. The road system could be used as an access point for people to access the South Fork Roadless Area.

The proposed road in Alternative B would cross Trail 241. The trail would still be maintained on an intermittent basis as long as it is needed for fire access purposes. The trail would be marked on both sides where it is intersected by the road in Alternative B. Over time, the trail tread would become less noticeable. Use on this trail is expected to remain low.

The proposed road in Alternative C would not cross Trail 241 on National Forest land. It is not anticipated that the trail would be maintained or protected after implementation of management activities in Stimson's Section 5, therefore it would become difficult to locate.

The ATV and motorcycle use that occurs on Road 308 would be expected to stay at the same level. A small amount of illegal ATV use may occur on the road in Sections 8 and 9, if people find ways to breech the road closure. However, the Priest Lake Ranger District routinely monitors the effectiveness of road closures to identify needed structure repairs or modifications (see Kalispell-Granite Grizzly Bear Access Management DN, USDA 1995). Therefore, any unauthorized use is expected to be minimal.

The use of the area by the outfitter, and the snowmobiling that occurs south of the project area along the 308 Road would both be expected to stay at the same level.

Consistency With the Forest Plan and Other Regulatory Direction

With implementation of either Alternative B or C, the project and surrounding area would maintain its existing ROS; therefore, consistency with the Forest Plan would be met.

Appendix A – Best Management Practices

Introduction

The Clean Water Act, as amended, (33 U.S.C. 1323) directs the Forest Service to meet state, interstate and local substantive as well as procedural requirements respecting control and abatement of pollution in the same manner, and to the same extent as any nongovernment entity.

The Forest Service has the statutory authority to regulate, permit and enforce land-use activities on the National Forest System lands that affect water quality.

As the designated management agency, the Forest Service is responsible for implementing nonpoint source pollution control and the Washington State Water Quality Standards on National Forest System lands. The Forest Service's water quality policy is intended to:

1) *promote the improvement, protection, restoration and maintenance of water quality to support beneficial uses on all national forest service waters;*
2) *promote and apply approved Best Management Practices (BMPs) to all management activities as the method for control of non-point source pollution;*
3) *comply with established state or national water quality goals; and*
4) *design monitoring programs for specific activities and practices that may affect or have the potential to affect instream beneficial uses on National Forest System lands.*

The Forest Service also coordinates all water quality programs, on National Forest System lands within its jurisdiction, with the local, state and federal agencies, affected public lands users, adjoining land owners, and other affected interests.

The Environmental Protection Agency and the State of Washington are responsible for enforcement of these standards. The Forest Plan for the Idaho Panhandle National Forests states that the Forest will "maintain high quality water to protect fisheries habitat, water based recreation, public water supplies and be within state water quality standards" (Forest Plan, Chapter II, p. 27). The use of BMPs is also required in the Memorandum of Understanding between the Forest Service and the State of Washington as part of our responsibility as the Designated Water Quality Management Agency on National Forest System lands. The State's water quality standards regulate nonpoint source pollution from timber management and road construction activities through application of Best Management Practices (BMPs). The BMPs were developed under authority of the Clean Water Act to ensure that Washington's waters do not contain pollutants in concentrations that adversely affect water quality or impair a designated use. State-recognized BMPs that would be used during project design and implementation are contained in these documents:

a. *Rules and Regulations Pertaining to the Washington Forest Practices as adopted by the State of Washington.*

Many of the rules and regulations for stream channel alterations are contained, in slightly different forms, in a Memorandum of Understandings (MOU) between the Forest Service and the State Washington. This MOU is incorporated into the Forest Manual and R-1 Supplement 31 and it contains provisions which are not currently state-recognized BMPs.

Please refer to Chapter II of this Environmental Analysis for site-specific and project-specific BMPs and Soil and Water Conservation Practices ("Water Quality Best Management Practices").

The practices described herein are tiered to the practices in FSH 2509.22. They were developed as part of the NEPA process, with interdisciplinary involvement, and meet state and Forest water quality objectives. The purpose of this appendix is to establish the connection between the Soil and Water Conservation Practice (SWCP) employed by the Forest Service and BMPs identified in the Washington Forest Practices Rules and Regulations (Title 222 WAC), and to identify how the Soil and Water Conservation Practice Standard Specifications for the Construction of Roads and

the Timber Sale Contract provisions meet or exceed the rules and regulations pertaining to the Washington Forest Practices Act RCW 76.09.

The objective of this appendix is to provide conservation practices for use on National Forest Lands to minimize the effects of management activities on soil and water resources. The conservation practices were compiled from Forest Service manuals, handbooks, contract and permit provisions, to directly or indirectly improve water quality, reduce losses in soil productivity and erosion, and abate or mitigate management effects, while meeting other resource goals and objectives. They are of three basic forms: administrative, preventive, and corrective. These practices are neither detailed prescriptions nor solutions for specific problems. They are purposely broad. These practices are action-initiating process mechanisms which call for the development of requirements and considerations to be addressed prior to and during the formulation of alternatives for land management actions. They serve as checkpoints that are considered in formulating a plan, a program, and/or a project.

Although some environmental impacts may be characteristic of a management activity, the actual effects on soil and water resources would vary considerably. The extent of these management effects on soil and water resources is a function of:

1. *The physical, meteorological and hydrologic environment where the activity takes place (topography, physiography, precipitation, channel density, geology, sol type, vegetative cover, etc.).*

2. *The type of activity imposed on a given environment (recreation, mineral exploration, timber management, etc.) and its extent and magnitude.*

3. *The method of application and the duration of the activity (grazing system used, types of silvicultural practice used, constant vs. seasonal use, recurrent application or one time application, etc.).*

4. *The season of the year that the activity occurs or is applied.*

These factors vary within the National Forests in the Northern Region and from site to site. It follows then that the extent and kind of impacts are variable, as are the abatement and mitigation measures. No solution prescription, method, or technique is best for all circumstances. Thus the management practices presented in the following include such phrases as "according to the design", "as prescribed," "suitable for," "within acceptable limits," and similar qualifiers. The actual prescriptions, specifications, and designs are the result of evaluation and development by professional personnel through interdisciplinary involvement in the NEPA process. This results in specific conservation practices that are tailored to meet site-specific resource requirements and needs.

Implementation of Best Management Practices

In cooperation with the State of Washington, the Forest Service's primary strategy for the control of nonpoint sources is based on the implementation of BMPs determined necessary for the protection of the identified beneficial uses. The Forest Service Nonpoint Source Management System consists of:

1. *BMP selection and design based on site-specific conditions; technical, economic and institutional feasibility; and the designated beneficial uses of the streams.*
2. *BMP Application*
3. *BMP monitoring to ensure that they are being implemented and are effective in protecting designated beneficial uses.*
4. *Evaluation of BMP monitoring results.*
5. *Feeding back the results into current/future activities and BMP design.*

The District Ranger is responsible for insuring that this BMP feedback loop is implemented on all projects. The Practices described herein are tiered to the practices in R1/R4 FSH 2509.22. They were developed as part of the NEPA process, with interdisciplinary involvement, and meet State and Forest water quality objectives. The purpose of this appendix document is to: 1) establish the connection between the SWCP employed by the Forest Service and BMPs identified in Washington Forest Practices Act (WAC 22-30) and 2) identify how the SWCP, Standard

Specifications for the Construction of Roads, and the Timber Sale Contract provisions meet or exceed the rules and regulations pertaining to the Washington Forest Practices Act (WAC 222-30 and WAC 222-24).

Format of the Best Management Practices

Each Soil and Water Conservation Practice is described as follows:

Title: Includes the sequential number and a brief title.

Objective: Describes the objective(s) and the desired results for protecting water quality.

Effectiveness: Provides a qualitative assessment of expected effectiveness that the implemented BMP would have on preventing or reducing impacts on water quality. The effectiveness rating is based on: 1) literature and research (must be applicable to area 2) administrative studies (local or within similar ecosystem); and 3) professional experience (judgement of an expert by education and/or experience). The expected effectiveness is rated either High, Moderate or Low.

High: Practice is highly effective (>90%) and one or more of the following types of documentation are available:

a) Literature/Research - must be applicable to area
b) Administrative studies - local or within similar ecosystem
c) Experience - judgment of an expert by education and/or experience.
d) Fact - obvious by reasoned (logical response).

Moderate: Documentation shows that the practice is effective less than 90% of the time, but at least 75% of the time.

Or

Logic indicates that this practice is highly effective, but there is little or no documentation to back it up.

Or

Implementation and effectiveness of this practice will be monitored and the practice will be modified if necessary to achieve the objective of the BMP.

Low: Effectiveness unknown or unverified, and there is little to no documentation

Or

Applied logic is uncertain in this case, or the practice is estimated to be less than 75% effective.

Or

This practice is speculative and needs both effectiveness and validation monitoring.

The effectiveness estimates given here are general, given the range of conditions throughout the Forest. More specific estimates are made at the project level when the BMPs are actually prescribed.

Compliance: Provides a qualitative assessment of how the implementation of the specific measures would meet the Forest Practice Act Roles and Regulations pertaining to water quality.

Implementation: This section identifies: (1) the site-specific water quality protection measures to be implemented and (2) how the practices are expected to be applied and incorporated into the Timber Sale Contract.

Items Common to All Soil and Water Conservation Practices

Responsibility For Implementation: The District Ranger (through the Presale Forester) is responsible for insuring the factors identified in the following SWCP's are incorporated into: Timber Sale Contracts through the inclusion of proper B and/or C provisions; or Public Works Contracts through the inclusion of specific contract clauses.

The Contracting Officer, through his/her official representative (Sale Administrator and/or Engineering Representatives for timber sale contracts; and Contracting Officers Representative for public works contracts) is responsible for insuring that the road construction and timber sale provisions are properly administered on the ground.

Monitoring: Implementation and effectiveness of water quality mitigation measures are also monitored annually. This includes routine monitoring by timber sale administrators, road construction inspectors, and resource specialists which is documented in diaries and project files. Basically, water quality monitoring is a review of BMP implementation and a visual evaluation BMP effectiveness. Any necessary corrective action is taken immediately. Such action may include modification of the BMP, modification of the project, termination of the project, or modification of the state water quality standards.

Abbreviations

TSC = Timber Sale Contract
TSA = Timber Sale Administrator
PWC = Public Works Contract
SCA = Stream Channel Alteration Act
BMP = Best Management Practices
SPS = Special Project Specifications
CFR = Code of Federal Regulations
SAM = Sale Area Map
COR = Contracting Officer Representative
EPA = Environmental Protection Agency
SWCP= Soil and Water Conservation Practices
SMZ = Streamside Management Zone

There is a glossary of terms related to best management practices at the end of this appendix.

Key Soil And Water Conservation Practices

Class * Soil and Water Conservation Practice (FSH 2509.22)

11 **WATERSHED MANAGEMENT**

W 11.07 Oil and Hazardous Substance Spill Contingency Planning
W 11.09 Management by Closure to Use
W 11.11 Petroleum Storage & Delivery Facilities & Management

13 VEGETATION MANIPULATION

G 13.03 Tractor Operation Excluded from Wetlands, Bogs, and Wet Meadows
E 13.04 Revegetation of Surface Disturbed Areas
E 13.05 Soil Protection During and After Slash Windrowing
E 13.06 Soil Moisture Limitations for Tractor Operation

14 TIMBER

E 14.14 Revegetation of Areas Disturbed by Harvest Activities
S 14.17 Streamcourse Protection (Implementation and Enforcement
E 14.18 Erosion Control Structure Maintenance

15 ROADS AND TRAILS

A 15.02 General Guidelines for Road Location/Design
E 15.03 Road and Trail Erosion Control Plan
E 15.04 Timing of Construction Activities
E 15.05 Slope Stabilization and Prevention of Mass Failures
E 15.06 Mitigation of Surface Erosion and Stabilization of Slopes
E 15.07 Control of Permanent Road Drainage
E 15.08 Pioneer Road Construction
E 15.09 Timely Erosion Control Measures on Incomplete Road and Stream-Crossing Projects
E 15.10 Control of Road Construction Excavation & Sidecast Material
S 15.11 Servicing and Refueling of Equipment
S 15.12 Control of Construction In Riparian Areas
S 15.13 Controlling In-Channel Excavation
S 15.14 Diversion of Flows Around construction Sites
S 15.15 Stream Crossings on Temporary Roads
S 15.16 Bridge & Culvert Installation (Disposition of Surplus Material and Protection of Fisheries)
E. 15.17 Regulation of Borrow Pits, Gravel Sources, and Quarries
E 15.18 Disposal of Right-of-Way and Roadside Debris
S 15.19 Streambank Protection
E 15.21 Maintenance of Roads
E 15.22 Road Surface Treatment to Prevent Loss of Materials
E 15.23 Traffic Control During Wet Periods
G 15.24 Snow Removal Controls

* **CLASSES OF SWCP (BMP)**

A = Administrative
E = Erosion Reduction
G = Ground Disturbance Reduction
S = Stream Channel Protection/Stream Sediment Reduction
W = Water Quality Protection

Best Management Practices

PRACTICE 11.07 *- Oil and Hazardous Substance Contingency Planning*
PRACTICE 11.11 *- Petroleum Storage and Delivery Facilities and Management*
PRACTICE 15.11 *- Servicing and Refueling of Equipment*

OBJECTIVE: To prevent contamination of waters from accidental spills of fuels, lubricants, bitumens, raw sewage, wastewater and other harmful materials by prior planning and development of Spill Prevention Control and Countermeasure Plans (SPCC).

EFFECTIVENESS: Although SPCC Plans cannot eliminate the risk of materials being spilled and escaping into waters, they can, if followed, be effective at reducing adverse effects to tolerable levels. Depending on the location and quantity of a spill, a properly implemented Plan can provide for up to 100 percent containment of a spill.

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: The timber sale contract holds the Purchaser responsible for taking appropriate preventative measures to insure that any spill of oil or oil products does not enter any stream or other waters of the United States. If the total oil or oil products storage exceeds 1,320 gallons, or if any single container exceeds the capacity of 660 gallon, the Purchaser would prepare a Spill Prevention Control and Countermeasure Plan. The plan shall meet EPA requirements including certification by a registered professional engineer. If necessary, specific requirements for transporting oil to be used in conjunction with the contract would be specified in the contract.

The Forest Service would designate the location, size and allowable uses of service and refueling areas. The criteria below would be followed at a minimum:

1. *Petroleum product storage containers with capacities of more than 200 gallons, stationary or mobile, would be located no closer than 100 feet from stream, water course, or area of open water. Dikes, berms, or embankments would be constructed to contain the volume of petroleum products stored within the tanks. Diked areas would be sufficiently impervious and of adequate capacity to contain spilled petroleum products.*
2. *Transferring petroleum products: During fueling operations or petroleum product transfer to other containers, there shall be a person attending such operations at all times.*
3. *Equipment used for transportation or storage of petroleum products shall be maintained in a leakproof condition. If the Forest Service Representative determines there is evidence of petroleum product leakage or spillage, he/she shall have the authority to suspend the further use of such equipment until the deficiency has been corrected.*

In the event any leakage or spillage enters any stream, water course or area of open water, the operator would immediately notify the Forest Service who would be required to follow the actions to be taken in case of hazardous spill, as outlined in the Forest Hazardous Substance Spill Contingency Plan.

PRACTICE 11:09 - Management by Closure to Use
PRACTICE 15:23 - Traffic Control During Wet Periods

OBJECTIVE: To reduce the potential for road surface disturbance during wet weather and to reduce sedimentation probability by excluding activities that could result in damage to facilities or degradation of soil and water resources.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: Closures (seasonal, temporary, or permanent) are made when the responsible line officer determines that a particular resource or facility needs protection from use. Specific guidelines for closure of roads during the period of the contract and at the end of the Purchaser's operations would be spelled out in this EIS and the timber sale contract.

Roads that must be used during wet periods should have a stable surface and sufficient drainage to allow such use with a minimum of resource impact. Rocking, paving and armoring are measures that may be necessary to protect

the road surface and reduce erosion potential. Roads not constructed for all weather use should be closed during the wet season. Where winter field operations are planned, roads may need to be upgraded and maintenance intensified to handle the traffic without creating excessive erosion and damage to the road surface.

PRACTICE 13.04 *- Revegetation of Surface Disturbed Areas*
PRACTICE 14.14 *- Revegetation of Areas Disturbed by Harvest Activities*

OBJECTIVE: To protect soil productivity and water quality by minimizing soil erosion.

EFFECTIVENESS: Revegetation can be moderately effective at reducing surface erosion after one growing season, following disturbance, and highly effective in later years. Effectiveness has been shown to vary from 10 percent on 3/4:1 slopes to 36 percent on 1:1 slopes to 97 percent on 1:1 slopes in later years (King, John G. and E. Burroughs. Reduction of Soil Erosion on Forest Roads. Intermountain Research Station General Technical Report, 1988).

COMPLIANCE: Meets Forest Practices Act rules.

IMPLEMENTATION: As determined necessary, temporary roads, landings skid trails, and anywhere else soil has been severely disturbed by Purchaser's harvesting or road construction operations would be seeded within one year after harvesting is completed. Seed mixes (consisting of native species) and fertilizer specifications would be incorporated into timber sale contract provisions. The timber sale contract would also include specifications for scarification/ripping of compacted landing and closed roads where this is deemed necessary by the interdisciplinary team.

PRACTICE 13.05 - Soil Protection During and Following Slash Windrowing

OBJECTIVE: To prevent removal or severe disruption of the productive surface soil and minimize losses from erosion.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act rules.

IMPLEMENTATION: Windrowing or piling of slash with tractor or grapple piling machine is a common method of fire hazard abatement and site preparation. Potential for damage to soils and water are high. On slopes, windrows should be contoured as much as possible to act as a filter barrier which catches sediment and detains water runoff. Such piling would only be conducted on slopes greater than 50 percent upon the recommendation of a soils scientist or hydrologist. Care must be taken to minimize disturbance to the surface soil layer during these operations. Equipment would be prohibited from operating within 50 feet of streamcourses except at designated crossing areas. Areas where such slash disposal operations are acceptable would be identified in the environmental assessment and in the timber sale contract, where site-specific specifications would be included.

Practice 13.06 - Soil Moisture Limitations for Tractor Operation

OBJECTIVE: To minimize soil compaction, puddling, rutting, and gullying with resultant sediment production and loss of soil productivity by ensuring that activities are done when ground conditions are such that erosion and sedimentation can be controlled.

EFFECTIVENESS: Responsible implementation and enforcement are required for high effectiveness.

COMPLIANCE: No Related Forest Practices Act rules.

IMPLEMENTATION: Tractor operations would be limited to periods when the soil moisture content is 18 percent or less, the ground is frozen, or there is at least 18 inches of snow depth. Tractor operations would only be allowed outside of these specifications through the sue of designated skid trails. These requirements would be incorporated into provision of the timber sale contract.

PRACTICE 15.04 - Timing of Construction Activities

OBJECTIVE: To minimize soil erosion, sedimentation and loss in soil productivity by insuring that the Purchaser conducts his operations, including erosion control work, road maintenance, etc., in a timely manner, within the time period specified in the timber sale contract.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: Limited operating periods are identified and recommended during the environmental analysis by the Interdisciplinary Team. Contract language specifies contract termination date and operating periods within that contract. Purchaser's plans must show intent to operate within these time frames prior to approval to commence work. Extensions of time (except for contract term adjustments) and waiver of specified operating periods should be granted only after interdisciplinary team review.

PRACTICE 14.17 - Stream Channel Protection (Implementation and Enforcement)
PRACTICE 15.19 - Streambank Protection

OBJECTIVES: To protect stream beds and streamside vegetation, during and after forest practice operations and road construction, by (1) maintained unobstructed passage of stormflows; (2) reducing sediment and other pollutants from entering streams; and (3) restoring the natural course of any stream, as soon as practical, if the stream is diverted as a result of timber management activities.

EFFECTIVENESS: High

COMPLIANCE: Meets Forest Practices Act rules

IMPLEMENTATION: Protecting stream channels during timber harvesting is accomplished by contract clause incorporated into the sale contracts. This is normally accomplished by designating particular streams as protected streamcourses and limiting or restoring timber management operations in streamside zones. There is substantial overlay between timber sale provisions to protect stream channels, and regulations that govern road construction and other practices.

The intent of the regulations and clauses is to protect the integrity of stream channels and minimize adverse impacts to the channel and downstream resources and beneficial uses. The following items are a minimum that would be incorporated into the timber sale contract specifically to govern channel protection in the project area.

1. Purchaser shall repair all damage to a streamcourse if the Purchaser is negligent in their operations, including damage to banks and channel, to an acceptable condition as specified by the Forest Service.
2. All project debris shall be removed from streamcourse, in an agreed manner that would cause the least disturbance. Specifically:

   Whenever possible trees shall be felled, bucked, and limbed in such a manner that the tree or any part thereof would fall away from any streams. Within 24 hours, slash and other debris that enters streams as a result of harvesting or road construction operations shall be removed. If the slash would be beneficial (i.e. provide sediment filtering) then the Sale Administrator may allow the Purchaser to leave the slash in place below culverts.
3. Location and method of stream crossing would be designed and agreed to prior to construction.
4. Wheeled or track laying equipment shall not be permitted to operate within 50 feet slope distance of the streams except at approved crossings.
5. On perennial streams, dewatering with filter fabric and/or diversion shall be considered prior to excavation for culvert placement.
6. Filter cloth, erosion control blankets, plastic, straw bales, and rip- rap would be used as appropriate to keep live water from contacting new fill during culvert installations.
7. When dewatering of a stream crossing is required, a non-erodible conduit, flex pipe or geotextile fabric would be used on all crossings. Silt fences shall be constructed below the stream crossing(s) prior to any streambank disturbance.

8. The construction activities in or adjacent to the stream may be limited to specific times to protect beneficial water uses.
9. Logs would be end-lined out of streamside and Riparian Areas. Equipment is permitted to enter streamside areas only at locations and times agreed by the Forest Service.
10. Material from temporary road and skid trail stream crossings would be removed and streambanks restored to an acceptable condition.
11. When cable yarding across or inside the riparian areas is necessary logs should be fully suspended across a stream and immediately above streambanks. Yarding shall be done in such a manner as to minimize streambank channel disturbance.
12. Construction equipment may cross, operate in or operate near streamcourses only where so agreed to and designated by the Forest Service prior to construction. Crossing of perennial stream channels would be done in compliance with the specifications included in the contract.
13. On perennial streams, stream channel alteration specifications would include the following:
    a. *Ford the stream only at one location.*
    b. *Any cofferdams or temporary crossings should be designed to handle high streamflows.*
    c. *Protect streambank vegetation as much as possible.*
    d. *All fill materials shall be placed and compacted in horizontal lifts.*
    e. *If rip rap is used, it shall extend at least one foot above anticipated high water mark, and meet minimum size criteria.*
    f. *Rip rap shall extend far enough upstream and downstream to reach stable areas.*
14. If the channel is damaged during construction, it would be restored as nearly as possible to its original configuration without causing additional damage to the channel.
15. Construction methods shall provide for eliminating or minimizing discharges of turbidity, sediment, organic matter or toxic materials. A settling basin may be required for this purpose.

PRACTICE 14.18 - Erosion Control Structure Maintenance

OBJECTIVE: To ensure that construction erosion control structures are stabilized and working effectively.

EFFECTIVENESS: High

IMPLEMENTATION: The timber sale contract requires that during the period of the contract, the Purchaser shall provide maintenance of soil erosion control structures constructed by the Purchaser until they become stabilized, but not for more than one year after their construction. After 1 year, any erosion control work needed is accomplished through the Forest Service funding.

The timber sale contract also requires the Purchaser to maintain the erosion control structures concurrently with his operations under the sale, and in any case, not later than 15 days after completion of skidding each unit or subdivision.

PRACTICE 15.02 - General Guidelines for the Location and Design of Roads and Trails

OBJECTIVE: To locate and design roads and trails with minimal soil and water resource impact while considering all design criteria.

EFFECTIVENESS: Moderate

COMPLIANCE: Exceeds Forest Practices Act rules

IMPLEMENTATION: As the timber sale contract is assembled, road location and design criteria are assembled from several volumes of standards, and optional specifications and guidelines. Specific roads and road segments often have specifications that are unique to the road or road segment. The following listed items, however, are general road location and design guidelines for minimizing impacts on water quality.

1. Fit the road to the topography - Use natural benches, follow contours, avoid long, steep road grades. Balance cut/fill where possible to avoid waste areas.
2. Locate on stable topography. Whenever possible, avoid slumps and slide prone areas and steep side hills.
3. Locate roads a safe distance away from streams and other water bodies, and provide an adequate buffer zone to trap sediment before it enters into any water body.
4. Minimize the number of stream crossings and choose stable sites. Structures would be designed (sized) for long-term stability, generally for the Q50+ (or greater) and then bumped up to the next culvert size and would provide for fish passage, if present. Use the IPNF Hydraulic analysis developed by Bob Embry to determine the Q50.
5. Locate and design roads to drain naturally by appropriate use of outsloping and insloping with cross drainage and grade changes, where possible. Cross drains would be installed to 1) carry interpreted flow across constructed areas; 2) to relieve the length undrained ditch; and 3) to reduce disruption of normal drainage patterns. Road and trail drainage should be channeled to effective buffer areas, either natural or man-made, to maximize sediment deposition prior to entry into live water.
6. Ditchlines and road grades would be designed to minimize unfiltered flow into streams. A rolling dip, relief culvert or similar structure would be installed as close as practical to crossings to minimize direct sediment and/or water input directly into streams. The drainage would be routed through the SMZ, buffer strips, or other sediment settling structures where possible.
7. At a minimum, windrows would be installed 100 feet on both sides of live stream crossings and where installation would minimize sediment delivery to nearby streams or channels. Windrows would also be installed where fill slope erosion is possible, or where road derived erosion may be delivered; (i.e. outflow area of culverts or rolling dips, etc.).
8. Design to the standard necessary to accomplish anticipated use and equipment needs safely, while providing for long-term protection of the soils and water.
9. Seeding and fertilization of erodible surfaces exposed during construction would be accomplished. Next season seeding would be done where original treatment is not fully successful.
10. Road construction occurring outside the normal operating season would have additional restrictions on the amount of pioneered road and additional erosion control measures.

PRACTICE 15.03 - Road and Trail Erosion Control Plan

OBJECTIVE: To prevent, limit, and mitigate erosion, sedimentation, and resulting water quality degradation through timely implementation of erosion control practice.

EFFECTIVENESS: Moderate

COMPLIANCE: No related Forest Practices Act rule

IMPLEMENTATION: Prior to the start of construction, the Purchaser shall submit a schedule for proposed erosion control work as required in the Standard Specifications. The schedule shall include all erosion control items identified in the specifications. Erosion control work to be done by the Purchaser would be defined in Standard Specification 204 and/or in the Drawings. The schedule shall consider erosion control necessary for all phases of the project. The Purchaser's construction schedule and plan of operation would be reviewed in conjunction with the erosion control plan by the Timber Sale Administrator, District Watershed Specialist, and Engineering to insure their compatibility before any schedules area approved. The Engineer would certify that the Purchaser's Erosion Control Plan meets the specifications.

PRACTICE 15.06 - Mitigation of Surface Erosion and Stabilization of the Slopes

OBJECTIVE: To minimize soil erosion from road cutslopes, fillslopes and travelway

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act Rule

IMPLEMENTATION: Areas requiring mitigation of surface erosion may occur anytime during the life of the timber sale contract. When these are found, the following provisions would be implemented.

a. All disturbed areas associated with road construction and reconstruction would be seeded. The first seeding would be applied as soon as practical after cuts and fills are brought to grade within seeding seasons as established in the timber sale contract. A second seeding in the fall or spring season following road construction would be required where original seeding did not adequately revegetate exposed soil areas.

b. Where surface erosion is occurring because of inadequate vegetative cover, additional seeding and re-fertilization would occur using recommended seed and fertilizer mixes. If the Purchaser has done his required seeding, or bare spots are not caused by the Purchaser, seeding would be done by the Forest Service.

c. Where ditches are carrying erosion products into stream channels, erosion cloth ditch blocks would be installed to "short-circuit" the delivery. Seeding of the eroding surfaces and seeding of the stored sediment in the ditch would also be accomplished.

d. Where either straw bale/erosion cloth structures are not felt to be effective, underdrains or other measures would be installed to drain the ditches onto suitable ground, or at least reduce erosion impacts to the stream.

e. Slumping of cutslopes would require a combination of both mechanical and vegetative controls. If/when this problem is found, a solution would be determined in consultation with Engineers, geotechnical and resource specialists and appropriate actions taken to remedy the situation or minimize adverse impacts.

f. Additional underdrains (i.e. French drains) would be constructed where intercepted moisture is encountered on incised stream approaches. Erosion control blankets and straw bales would be used to dissipate ditch scour and stabilize fill slopes.

g. At ditch relief culvert locations, or at culvert locations in dry or intermittent wet draws, the piles shall not be broken but shall be placed a minimum of 20 feet below the culvert outlet. At culvert locations in live streams, piles shall not be broken but shall be continued at the toe of the embankment over the top of the culvert. No slash shall be allowed to restrict the flow of water from the culvert.

Unless caused by the Purchaser during his maintenance operations, or known before sale award and included in timber sale contract, these items (a-g) would be beyond the scope of Purchaser responsibility. Repair and/or improvement would be then handled by contract modification or by the Forest Service.

PRACTICE 15.07 - Control of Permanent Road Drainage

OBJECTIVE: To minimize the erosive effects of concentrated water and the degradation of water quality by proper design and construction of road drainage systems and drainage control structures.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act rules

IMPLEMENTATION: The following items would be included in the identified road contract specifications or drawings.

1. *For New Construction and Reconstruction* - During and following operations on outsloped roads, retain out slope drainage and remove berms on the outside except those intentionally constructed for protection of road grade fills.
2. *For New Construction* - The following criteria would be incorporated into new road design:
   a. Construct cross drains and relief culverts to minimize erosion of embankments. Minimize the time between construction and installation of erosion control devices. Use riprap, vegetative matter, downspouts and similar devices to minimize erosion of the fill.
   b. Prior to fall or spring runoff, install drainage structures or cross-drain uncompleted roads which are subject to erosion.
   c. Install relief culverts at a minimum grade of 1 percent greater than road gradient.
3. *For Existing Roads* - At a minimum, the following items would be added to or improved in the existing road system that would be used for proposed timber haul:
   a. Energy dissipaters or downspouts would be placed below problem culvert outlets (Reconstruction item).

b. In all areas where ditch erosion is significant at this time, relief culverts that drain onto suitable areas would be installed (Reconstruction item).

c. Roads restricted after use would also have erosion control measures in place prior to final pull-out.

d. For all native surface roads to be restricted after use, the travelway would be seeded and fertilized: and would have the surface roughened to accept seed germination and vegetative establishment where necessary and beneficial.

PRACTICE 15.08 - Pioneer Road Construction

OBJECTIVE: To minimize sediment production and mass wasting associated with pioneer road construction.

EFFECTIVENESS: Moderate

COMPLIANCE: No directly related Forest Practices Act rule.

IMPLEMENTATION: The following contract specifications would be required:

a. Construction of pioneer roads shall be confined to the roadway limits unless otherwise approved by the Contracting Officer.

b. Pioneering shall be conducted so as to prevent undercutting of the designated final cut slope, and to prevent avoidable deposition of materials outside the designated roadway limits.

c. Erosion control work would be completed concurrent with construction activity or prior to the wet season. During the wet and winter season, no more that 1,000 feet of road can be in the pioneer state without the required erosion control work completed.

d. Permanent culverts would be installed during the pioneer phase unless positive control of sediment can be accomplished during installation, use, and removal of the temporary structure.

PRACTICE 15.09 - Timely Erosion Control Measures on Incomplete Road and Stream-Crossing Projects:

OBJECTIVE: To minimize erosion of and sedimentation from disturbed ground on incomplete projects.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act rules

IMPLEMENTATION: The following measures would be implemented during projects:

1. Temporary culverts, side drains, flumes, cross drains, diversion ditches, energy dissipaters, dips, sediment basins, berms, debris racks, or other facilities needed to control erosion would be installed as necessary. The removal of temporary culverts, culvert plugs, diversion dams, or elevated stream-crossing causeways would be completed as soon as practical.
2. The removal of debris, obstruction, and spoil material from channels and floodplains.
3. Seeding with native species to minimize erosion.
4. Installation of drainage structures or cross draining uncompleted roads which are subject to erosion prior to fall or spring runoff.

Erosion control measures must be kept current with ground disturbance, to the extent that the affects area can be rapidly "closed" if weather conditions deteriorate. Areas must not be abandoned for the winter with remedial measures incomplete.

PRACTICE 15.10 - Control of Road Construction Excavation and Sidecast Material
PRACTICE 15.18 - Disposal of Right-of-Way and Roadside Debris

Objective: To measure that unconsolidated excavated and sidecast material, construction slash, and roadside debris generated during road construction is kept out of streams, and to prevent slash and debris from subsequently obstructing channels.

Effectiveness: High

Compliance: Meets Forest Practices Act rules

Implementation: In the construction of road fills near streams, compact the material to reduce the entry of water, and minimize the amount of snow, ice, or frozen soil buried in the embankment. No significant amount of woody material shall be incorporated into fills. Slash and debris may be windrowed along the toe of the fill, but in such a manner as to avoid entry into a stream and culvert blockage.

Where slash windrows are not desirable or practical, other methods of erosion control such as erosion mats, mulch, and straw bale or fabric sediment fences would be used. Where exposed material (excavation, embankment, borrow pits, waste piles, etc.) is potentially erodible, and where sediments would enter streams, the material would be stabilized prior to fall or spring runoff by seeding, compacting, rip-rapping, benching, mulching or other suitable means.

PRACTICE 15.13 - Controlling In Channel Excavation

OBJECTIVE: To minimize downstream sedimentation by insuring that all in-channel excavations are carefully planned.

EFFECTIVENESS: High

COMPLIANCE: Meets SCA rules

IMPLEMENTATION: Location and method of stream crossings would be designed and agreed to prior to construction. The following items highlight some of the principal provisions which can be incorporated into the timber sale contract that would govern channel protection:

1. Construction equipment may cross, operate in, or operate near streamcourses only where so agreed to and designed by the Forest Service prior to construction.
2. No construction equipment shall be operated below the existing water surface except that fording the stream at one location only would be permitted, and work below the water level that is necessary for culvert bedding or footing installations would be permitted to the extent that it does not create unnecessary turbidity to stream channel disturbance.
3. Wheeled or track laying equipment shall not be permitted to operate within 25 feet slope distance of the apparent high water mark of Type 5 streams 75 feet of Type 4 streams, except at approved crossings.
4. Construction of any hydraulic structures in stream channels would be in compliance with timber sale contract specifications.

PRACTICE 15.14 - Diversion of Flows Around Construction Sites

OBJECTIVE: To minimize downstream sedimentation by insuring that all stream diversions are carefully planned.

EFFECTIVENESS: High

COMPLIANCE: Meets SCA Rules

IMPLEMENTATION: Flow in streamcourses may only be diverted if the Forest Service deems it necessary for the contractor to meet contractual specifications. Such a diverted flow shall be restored to the natural streamcourse as soon as practicable. Stream channels impacted by construction activity would be restored to their natural grade, condition, and alignment.

PRACTICE 15.15 - Stream Crossings on Temporary Roads

OBJECTIVE: To keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish passage.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets SCA Rules

IMPLEMENTATION: The following preventive measures would be included in contract specifications for such installations:

a. Divert stream flow through or around project sites during construction when that would minimize downstream sedimentation. Active streams would be de-watered or diverted during culvert installations only at the direction of the Forest Service.

b. Erodible material shall not be deposited into live streams.

c. Any material stockpiled on floodplains shall be removed before rising water reach the stockpiled material.

d. During excavation in or near the streamcourse, it may be necessary to use suitable coffer dams, caissons, cribs of sheet piling. This would usually be the cause where groundwater is contributing a significant amount of water to the immediate excavation area. If any of the aforementioned devices are used, they would be practically watertight and no excavation would be made immediately outside of them.

e. Water pumped form foundation excavation shall not be discharged directly into live streams, but shall be pumped into settling ponds or into locations where water would not re-enter stream.

PRACTICE 15.17 - Regulation of Borrow pits, Gravel Sources and Quarries

OBJECTIVE: To minimize sediment production form borrow pits, gravel sources, and quarries, and limit channel disturbances in those gravel sources suitable for development in floodplains.

EFFECTIVENESS: High

COMPLIANCE: No Related Forest Practices Act RULE

IMPLEMENTATION: Minimize opportunities for erosion from borrow pits and gravel sources from entering streams.

1. Complete any crushing and/or screening of excavating bedload away from any active stream channels and minimize future opportunities for waste materials to enter area streams, even under flood conditions.
2. Identify and implement opportunities to minimize erosion from existing borrow pits within the drainage.
3. If development of new rock sources are needed within the watershed, complete a pit development plan or rock source development plan which outlines all mitigation measures needed to control future erosion of the rock source.

PRACTICE 15.18 - Disposal of Right-of-Way and Roadside Debris

OBJECTIVE: To insure that debris generated during road construction is kept out of streams and to prevent slash and debris from subsequently obstructing channels. Also see Practice 15.10

EFFECTIVENESS: High

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: Disposal of Right-of-Way and roadside slash be accomplished with one or more of the following practices.

1. Windrowing
2. Scattering
3. Chipping
4. Piling and Burning
5. Removal to previously agreed to locations.

Solid cull logs may be bucked into manageable lengths and piled alongside the road for fuelwood. No wood may obstruct flow in ditchlines or culverts.

PRACTICE 15.19 Streambank Protection

OBJECTIVE: To minimize sediment production form streambanks and structural abutments in natural waterways.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: To reduce sediment and channel bank degradation at sites disturbed by construction of stream crossing or roadway fill, it may be necessary to incorporate "armoring" in the design of a structure to allow the water course to stabilize after construction. Riprap, gabion structures, and other measures are commonly use to armor stream banks and drainage ways form the erosive forces of the flowing water. These measures must be sized and installed in such a way that they effectively resist erosive water velocities. Stone use for riprap should be free from weakly structured rock, soil, organic material and materials of insufficient size, all of which are not resistant to stream flow and would only service as sediment sources. Outlets for drainage facilities in erodible soils commonly require rip-rapping for energy dissipation. See conservation practice 14.17 for additional measures.

PRACTICE 15.21 - Maintenance of Roads

OBJECTIVE: To conduct regular preventive maintenance operations to avoid deterioration of the roadway surface and minimize disturbance and damage to water quality, and fish habitat.

EFFECTIVENESS: Moderate

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: For roads in active timber sale areas standard timber sale contract provisions require the Purchaser to perform or pay for road maintenance work commensurate with the Purchaser's use. Purchaser's maintenance responsibility shall cover the before, during and after operations period during any year when operations and road use are performed under the terms of the Timber Sale Contract. All maintenance work shall be done concurrently, as necessary, at least to the following minimum standards:

1. Culverts and ditches shall be kept functional.
2. During and upon completion of seasonal operations, the road surface shall be crowned, out-sloped, in-sloped or waterbarred, and berms removed from the outside edge except those intentionally constructed for protection of fills.
3. The road surface shall be maintained as necessary to minimize erosion of the subgrade and to provide proper drainage.
4. If road oil or other surface stabilizing materials are used, apply them in such a manner as to prevent their entry into streams.
5. Sidecast of all material associated with road maintenance would be done in a manner to prevent its entry into streams.
6. Slumps, slides and other erosion features causing stream sedimentation would be kept repaired and stabilized.

PRACTICE 15.22 - Road Surface Treatment to Prevent Loss of Materials

OBJECTIVE: To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production.

EFFECTIVENESS: High

COMPLIANCE: No directly related Forest Practices Act Rule

IMPLEMENTATION: On timber sale roads, the Purchaser shall undertake measures to prevent excessive loss of road material if the need for such action has been identified by the interdisciplinary team. Road surface treatments may include: watering, applying magnesium chloride, sealing, aggregate surfacing, chip-sealing, or paving.

PRACTICE 15.24 - Snow Removal Controls

OBJECTIVE: To minimize the impact of snow melt on road surfaces and embankments and to reduce the probability of sediment production resulting from snow removal operations.

EFFECTIVENESS: Moderate

COMPLIANCE: No directly related Forest Practices Act Rule

IMPLEMENTATION:

1. The Purchaser is responsible for snow removal in a manner which would protect roads and adjacent resources.
2. Rocking or other special surfacing and/or drainage measures may be necessary, before the operator is allowed to use the roads.
3. During snow removal operations, banks shall not be undercut nor shall gravel or other selected surfacing material be bladed off the roadway surface. Ditches and culverts shall be kept functional during and following roadway use. If the road surface is damaged, the Purchaser shall replace lost surface material with similar quality material and repair structures damaged in blading operations.
4. Snow berms shall not be left on the road surface or shall be placed to avoid channelization or concentration of melt water on the road or erosive slopes. Berms left on the shoulder of the road shall be removed and/or drainage holes opened at the end of winter operations and before spring breakup. Drainage holes shall be spaced as required to obtain satisfactory surface drainage without discharge on erodible fills. On in slopped roads, drainage holes shall also be provided on the ditch side, but care taken to insure that culvert inlets are not damaged.

PRACTICE 15.25 - Obliteration of Temporary Roads

OBJECTIVE: To reduce sediment generated from temporary roads by obliterating them at the completion of their intended use.

EFFECTIVENESS: High

COMPLIANCE: Meets Forest Practices Act Rules

IMPLEMENTATION: Effective obliteration is generally achieved through a combination of the following measures:

1. Road effectively drained and blocked.
2. Temporary culverts and bridges removed and any modified channel slopes stabilized and revegetated.
3. Road returned to resource production through revegetation (native species, or trees).
4. Sideslopes reshaped and stabilized.

PRACTICE 18.02 - Formulation of Fire Prescriptions
PRACTICE 18.03 - Protection of Soil and Water form Prescribed Burning

OBJECTIVE: To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients and debris from entering surface water.

EFFECTIVENESS: High

COMPLIANCE: No Related Forest Practices Act Rule

IMPLEMENTATION: The prescription elements are defined by the interdisciplinary team during the environmental analysis. Field investigations are conducted to identify site-specific conditions which may affect the prescription. Both the optimum and tolerable limits for soil and water resource needs should be established. Prescription elements would include such factors as fire, weather, slope aspect, soil moisture and fuel moisture which influence the fire intensity. These elements have a direct effect on whether or not a litter layer remains after burning and whether or not a water repellent layer is formed. The amount of remaining litter significantly affects erosion rates, water quality and runoff volumes.

Appendix B – Noxious Weeds

Several noxious and undesirable weed species occur or may occur in the project area, including weeds designated by the State of Washington as noxious and those considered for control by the Priest Lake Ranger District. Some weed species are not known in or near the project area but are potential new invaders. The list of noxious weeds includes the following:

Common name	**Scientific name**
Tansy ragwort	*Senecio jacobaea*
Scotch broom	*Cytisus scoparius*
Purple loosestrife	*Lythrum salicaria*
Leafy spurge	*Euphorbia esula*
Musk thistle	*Carduus nutans*
Diffuse knapweed	*Centaurea diffusa*
Spotted knapweed	*Centaurea biebersteinii*
Rush skeletonweed	*Chondrilla juncea*
Meadow hawkweed	*Hieraceum caespitosum*
Orange hawkweed	*Hieraceum aurantiacum*
Dalmatian toadflax	*Linaria genistifolia* ssp. *dalmatica*
Oxeye daisy	*Leucanthemum vulgare*
Sulfur cinquefoil	*Potentilla recta*
Goatweed	*Hypericum perforatum*
Canada thistle	*Cirsium arvense*
Bull thistle	*Cirsium vulgare*
Houndstongue	*Cynoglossum officinale*
Common tansy	*Tanacetum vulgare*
Dyer’s woad	*Isatis tinctoria*
Mousear hawkweed	*Hieracem pilosella*
Common crupina	*Crupina vulgare*
Scotch thistle	*Onopordum acanthium*
Perennial pepperweed	*Lepidium latifoliium*
Russian knapweed	*Acroptilon repens*
Brown knapweed	*Centaurea jacea*
Black knapweed	*Centaurea nigra*
Gorse	*Ulex europaeus*
Japanese knotweed	*Polygonum cuspidatum*
Bighead knapweed	*Centaurea macrocephala*
Vochin knapweed	*Centaurea nigrescens*
Buffalobur	*Solanum rostratum*
Meadow knapweed	*Centaurea jacea x nigra*
Babysbreath	*Gypsophila paniculata*
Common bugloss	*Anchusa officianalis*
Viper’s bugloss	*Echium vulgare*

As specified in Features Common to All Action Alternatives, the private landowner would be required to monitor for and treat the above species on newly constructed Forest road for three years following each period of use. Treatment must be conducted according to the Integrated Pest Management Strategy outlined in the Priest Lake Noxious Weed Control Project Record of Decision and Final EIS (USDA 1997).

Treatment methods may include cultural, mechanical, biological and chemical. Any chemical control would be conducted in accordance with label guidelines and would be performed or directly supervised by a licensed pesticide applicator.

The private landowner would be required to submit a monitoring report to the District Weed Coordinator annually during the abovementioned three-year period. A weed treatment report, and pesticide use report if necessary, would also be submitted. A sample report format follows.

The list of Noxious Weeds of Pend Oreille County from the Washington State Noxious Weed Control Board is included in the project file. A copy of the Priest Lake Noxious Weed Control Project Final EIS is available at the Priest Lake Ranger District.

NOXIOUS WEED MONITORING AND TREATMENT REPORT

Sale / Area:_____ Date:_____ Observers:_____

Survey Method: Vehicle Foot Bike ATV **Page _____ of _____**

	Weed Species												
Road Segment	**SK**	**MH**	**OH**	**DT**	**SJ**	**TH**	**CT**	**HT**	**OD**	??	**Treated?**	**Need Spray?**	**Remarks (Herbicide Use, etc.)**

5 = EXTREME
4 = VERY HIGH
3 = HIGH
2 = MODERATE
1 = LOW
0 = NONE

SK = Spotted Knapweed
MH = Meadow Hawkweed
OH = Orange Hawkweed
DT = Dalmatian Toadflax
SJ = St. John's Wort

TH = Thistle
CT = Common Tansy
HT = Hound's Tongue
OD = Oxeye Daisy
?? = *

*New Invaders: Leafy Spurge, Diffuse Knapweed, Russian Knapweed, Purple Loosestrife, Scotch Broom, Yellow Starthistle, or other

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Appendix D – List of Preparers

Stimson Access Project Interdisciplinary Team

Name	Title	Area of Expertise	Qualifications	Office
Debbie Butler	Resource Forester	Project Team Leader Roadless Area Recreation Scenery Special Uses	B.S. Forestry; Graduate Studies Recreation USDA FS 20 years	Priest Lake Ranger District
Jill Cobb	Hydrologist	Water Resources Soils	B.A. Geography & Ecosystems Analysis, M.S. Watershed Management; USDA FS 17 years	Priest Lake Ranger District
Anna E. Hammet	Botanist	TES and Rare Plants Noxious Weeds	B.A. Biology (Botany); USDA FS, 24 years	Sandpoint Ranger District
Tim Layser	Wildlife Biologist	TES and Other Wildlife	B.S. Wildlife Biology, M.S. Environmental Science - Nat Res Mgmt; USDA FS, 23 years	Priest Lake Ranger District
Brett Roper	Fisheries Biologist	Fisheries	B.S. Environmental Studies; M.S. Forestry; Ph.D. Fisheries; USDA FS 7 years	Supervisor's Office, Idaho Panhandle National Forests
Tom Sandberg	Archaeologist	Heritage and Cultural Resources	B.A. Archaeology/ Anthropology USDA FS, 8 years	Sandpoint Ranger District
Judy York	Writer-Editor	Public Involvement Content Analysis Document Editor	B.S. Wildlife, M.S. Nat. Res Communication; USDA FS, 13 years	Sandpoint Ranger District
Pete Zimmerman	NEPA Coordinator	NEPA Consultation Fire/Fuels	B.S. Forestry; USDA FS, 21 years	Sandpoint Ranger District

Support Team Members – The following individuals provided technical or other support to the analysis

Name	Title	Area of Support	Office
David Asleson	Priest Lake Acting District Ranger	Document Review Environmental Justice Analysis	Priest Lake Ranger District
Teresa Asleson	Archaeology Asst.	Heritage Resources Inventory	Priest Lake Ranger District
Camilla Cary	Database	Content Analysis; Mailing List	Priest Lake Ranger District
John Chatel	Fisheries Biologist	Preliminary Fisheries Analysis	Formerly Sandpoint Ranger District; currently Umpqua NF, Oregon
Shanda Dekome	Fish Biologist	Fisheries Analysis	Sandpoint Ranger District
Karl Dekome	NEPA Coordinator	NEPA Consultation and Document Review	Palouse Ranger District, Clearwater National Forest

Name	Title	Area of Support	Office
Jim Dvoracek	Lands Forester	Lands/ Easement Consultation	Supervisor's Office, Idaho Panhandle National Forests
Jim Langdon	Engineer	Road Design and Costs	Supervisor's Office, Idaho Panhandle National Forests
Brett Lyndaker	Biological Technician	Grizzly Bear Analysis	Sandpoint Ranger District
Jerry Niehoff	Soil Scientist	Soils Analysis	Supervisor's Office, Idaho Panhandle National Forests
Rick Patten	Hydrologist	Water Resources Analysis	Supervisor's Office, Idaho Panhandle National Forests
Diane Penny	Biological Technician	GIS Mapping for Wildlife Analysis TES Plant Surveys	Priest Lake Ranger District
Sabrina DeRusseau	Biological Technician	GIS Mapping For Wildlife Analysis Data Gathering	Priest Lake Ranger District
Chris Savage	Hydrologist	Water Resources Analysis	Sandpoint Ranger District
Deb Scribner	Database Coordinator	GIS Mapping	Sandpoint Ranger District