Whitebark Pine Restoration Environmental Assessment

Selkirk Mountains

Bonners Ferry Ranger District
Idaho Panhandle National Forests

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Chapter 1 Purpose and Need

1.1 Project Area and Location

The Whitebark Pine project area is located on the Bonners Ferry Ranger District on the Idaho Panhandle National Forests (IPNF). It encompasses nearly 135,000 acres of ten watersheds located in the eastern portion of the Selkirk Mountains, including Smith, Long Canyon, Parker, Farnham, Fisher, Trout, Ball, Burton, Cascade, and Myrtle Creek drainages. The center point of the project area is located approximately 13 air miles northwest of Bonners Ferry, Idaho. It is bounded on the east by the Purcell Trench (Kootenai River valley) and on the west by the Selkirk Mountains crest. The southern boundary is the divide between the Myrtle and Snow Creek drainages. The northern boundary follows the divide between Smith Creek, and Beaver and Boundary Creek drainages. The Bonners Ferry Ranger District administers approximately 126,000 acres of the project area, while private landowners hold the remaining 9,000 acres.

1.2 Purpose and Need

The specific purpose and need for entering the Whitebark Pine project area is three-fold, as follows:

1) Restore forest health and maintain whitebark pine in the ecosystem through manipulation of the composition and structure of designated stands by:

   a. Returning whitebark pine stocking levels to those within the historic range of variability, creating adequate seedbeds for natural and artificial regeneration.
   b. Reducing competition with other species, especially subalpine fir, in areas where adequate numbers of whitebark seedlings currently exist, but are being out competed by more shade-tolerant species.
   c. Protecting healthy seed-producing whitebark pine trees from insect damage and mortality with applications of mountain pine beetle protectants, including non-host volatiles (NHVs) and verbenone.

The introduced fungal disease, white pine blister rust (Cronartium ribicola), has caused the most rapid and precipitous reductions in whitebark pine. In some northwestern Rocky Mountain forests, including the Selkirk Mountains of northern Idaho, whitebark pine losses are so great (over 90%) that seed production is sparse and regeneration is unlikely (Tomback et al 2001). Field surveys in the northern Selkirks from the summer of 2001 revealed that 70% of the whitebark pine trees were infected with blister rust.

Periodically, mountain pine beetle outbreaks can also cause widespread mortality in whitebark pine (Tomback et al 2001). Aerial surveys in late summer of 1999 discovered a major mountain pine beetle outbreak in the northern Selkirk Mountains in whitebark pine. During the summers of 2000 and 2001 Forest Service entomology crews did bark beetle ground-survey work in the northern Selkirks, and found that the mountain pine beetle outbreak was very large, still

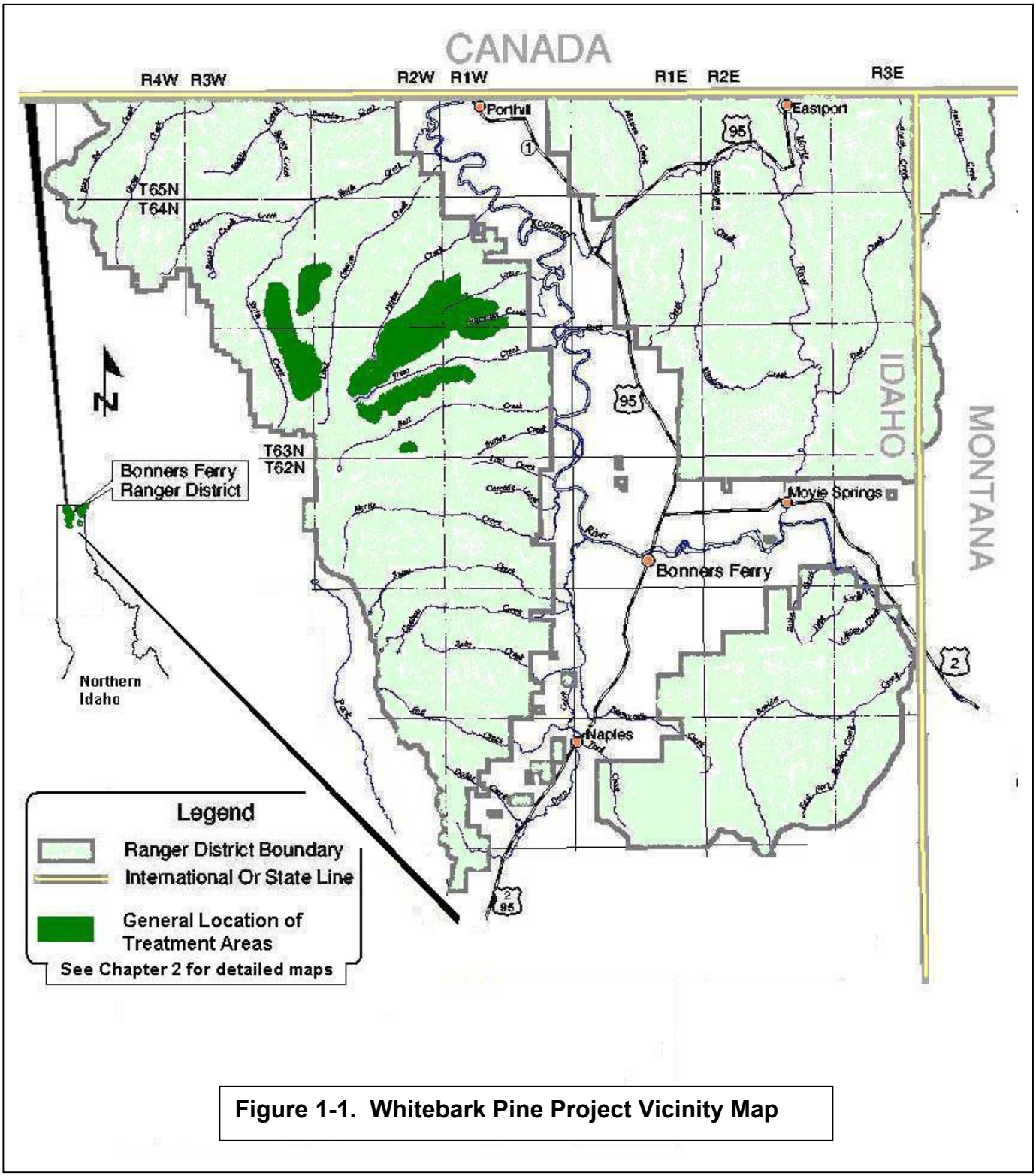


Figure 1-1. Whitebark Pine Project Vicinity Map

growing, and killing a high percentage of the mature whitebark pine trees in some areas (2002 Forest Plan Monitoring Report). Based on the 2002 Report, nearly 40% of the whitebark pine surveyed had been killed by mountain pine beetle.

Across the Idaho Panhandle National Forests, observations show that as much as 95 percent of the whitebark pine have died in stands where it used to be a major component of the vegetation (Zack, 1995.) See Chapter 3 for more information on the whitebark pine portion of the ecosystem.

2) Reintroduce the role of fire in the ecosystem.

Fire has played a major role in shaping and maintaining the ecosystems in the Selkirk Mountains as summarized in Table 1-1.

Following the introduction of blister rust, fire suppression is the second most important factor that has caused declines in whitebark pine populations. Fire is essential in maintaining healthy, productive stands of whitebark pine in the face of competition from less fire-resistant tree species. In the absence of fire, whitebark pine cone production may decrease as more shade-tolerant and less fire-resistant trees increase in abundance (Arno 1986). Fire has been the primary ecological process that shaped the landscape (Agee 1993). This process has been altered due to fire suppression during the last century.

Whitebark pine is a shade-intolerant species that requires canopy openings for regeneration. Where it grows in mixed species stands, if there is no significant canopy-opening disturbance over a long time, whitebark pine will eventually be replaced by other species. In mixed species stands, fire is essential to maintain whitebark pine. At higher elevations, fire clears away other competing vegetation, and opens sites for whitebark pine regeneration.

Table 1-1 Summary of Past Fires in the Selkirk Mountains

Area	**Summary of Fire History** (approximate years)
Smith Creek	**Approximately 90% of upper Smith Creek burned in 1750, 1800, 1830, and 1840. About 75% of lower portion burned in 1895 (Allen, 1999)**
Long Canyon Creek	**Many fires burned thousands of acres throughout the 1700s and 1800s. The upper 1/3 or more burned in 2 major fires around 1780 and 1930.**
Parker Creek	**Many fires burned thousands of acres throughout the 1700s and 1800s. The upper 1/3 or more burned in 2 major fires around 1780 and 1930. The only large fire since then was the 1994 Fisher Peak Fire that burned in both Parker and Fisher creeks for a total of 337 acres.**
Fisher Creek	**Several large fires have occurred from the mid-1700s through early 1900s, burning thousands of acres. The only large fire since then was the 1994 Fisher Peak Fire, which burned a total of 337 acres in Fisher and Parker creeks.**
Trout Creek	**Most of the upper 40% of the watershed burned in 3 major fires around 1740, 1770, and 1930; burning thousands of acres. No large fires have burned in the watershed in the past 50 or more years.**
Ball Creek	**About 80% of the watershed burned in 3 major fires in 1780, 1800, and 1830; burning nearly 14,000 acres. Since 1950, another 200 acres were burned by wildfires; in the 1960s, an escaped prescribed fire burned 2600 acres.**

Historically, before the introduction of white pine blister rust, after mountain pine beetle had reduced the whitebark pine population, forest fires provided opportunities for new whitebark pine regeneration.

When blister rust mortality, the effects of fire suppression, and the impact of mountain pine beetle come together, whitebark pine can be virtually eliminated from some mountain ridge systems. This pattern of loss is exactly what appears to be happening in high elevation areas across much of the Idaho Panhandle (2002 Forest Plan Monitoring Report, page 72).

Area	Summary of Fire History continued (approximate years)
Burton-Cascade	**About 60% of these watersheds burned around 1800 and 1890; another 10 to 15% burned around 1860 and 1870. The 2003 Myrtle Creek Fire burned about 150 acres in Cascade Creek.**
Myrtle Creek	**This drainage has had a dramatic fire history since 1740. Large fires occurred around 1750, 1800, 1830, 1860, 1890, and 1926; burning an average of 1300 acres each decade. The 2003 Myrtle Creek Fire burned about 3450 acres in the watershed.**

More information on fire history is found in Chapter 3. The table shows an overall disturbance pattern of large fires in one or more drainage about every third or fourth decade from the mid-1700s until the Forest Service began effective aggressive fire suppression. In the last 50 years, the role of fire has been greatly reduced.

3) Provide for wildlife habitat diversity.

At the landscape scale, forest diversity would be the greatest if the landscape were covered by stands of many different sizes, ages, and species composition (Hunter 1992).

Whitebark pine occupies the most severe, highest elevation forested sites in our ecosystems; growing in isolated populations often separated by many miles of lower elevation ground from the next whitebark pine population. At the highest elevations it may be the only tree that can tolerate the severe conditions and may effectively raise the tree line several hundred feet in elevation above where it might be otherwise. Whitebark pine has large nutritious seeds that are an important food source for grizzly bear, black bear, Clark's nutcracker, and red squirrel. (2002 IPNF Monitoring Report, page 72)

The concerns for loss of the whitebark pine component include potential effects on wildlife habitat. A decline in whitebark pine seeds as a food source represents a deterioration of grizzly bear foraging habitat. If whitebark pine were to disappear from the local landscape, carrying capacity for grizzly bears may be reduced in affected BMUs due to forage limitations.

Whitebark pine seeds are also a primary food source for Clark's nutcrackers, (Tomback 2000, pg. 90-91). Loss of this food source would effect populations of this species.

1.3 Overview of Scientific Findings from Broad Scale to Site Specific

The purpose and need for this project was derived from information in a number of scientific assessments. Starting at the broad scale, general information about characteristics of the

ecosystem in the Columbia River Basin was determined. From there, an analysis to more specific levels of information from the Columbia River level, to a subbasin level, to a watershed area level, and finally to a subwatershed or project area level were determined. General information from these assessments and how they relate to the Whitebark Pine Project Area is briefly described below.

A. Interior Columbia Basin Ecosystem Management Project

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) Scientific Assessment (Quigley and Arbelbide 1997) evaluates all the National Forest and Bureau of Land Management administered lands in a 63 million-acre area within eastern Oregon, eastern Washington, most of Idaho, and western Montana. According to the assessment, all of the Idaho Panhandle National Forests is located in Forest Cluster 4. This cluster is described as containing heavily roaded, moist forest types with moderate to high hydrologic integrity and low forest, aquatic, and composite integrity.

The Scientific Assessment shows that the primary risks to ecological integrity are:

- Risks to late and old forest structures in managed areas,
- Forest compositions susceptible to insects, disease and fire, and
- Risks to hydrologic and aquatic systems from fire potential.

In the assessment, the level below the Columbia River Basin scale was defined as "subbasin." The Whitebark Pine project is located in the Kootenai River subbasin, one of 164 subbasins in the Columbia River Basin.

B. Northern Region Overview

The Northern Region consists of 12 National Forests covering lands in northern Idaho, extreme northeastern Washington, and Montana; and four National Grasslands in North Dakota and northwestern South Dakota. The Northern Region Overview (USDA 1998) focused on priorities for restoring ecosystem health and availability of recreation opportunities. The Overview incorporates findings from the Interior Columbia River Basin Scientific Assessment and Northern Great Plains assessments.

The Overview findings conclude that there are multiple areas of concern in the Northwest Zone of the Region, which includes the Idaho Panhandle National Forests. The forest health concerns include whitebark pine and lists mountain pine beetle, blister rust, fire and fire suppression among the agents of change for this area of concern (Northern Region Overview, Summary, USDA October 1998 page 7.) The Overview also looked at the possibilities for integrated projects and the compatibility of opportunities and potential conflicts between various restoration objectives, conservation needs, recreation uses and opportunities, and social and economic situations. Part of the conclusion was that the Northwest Zone "... holds the greatest opportunity for vegetation treatments and restoration with timber sales" (Northern Region Overview Summary, page 9). However, the whitebark pine project proposal is one of the more simple actions identified in the Overview. Actions "to address improved health... may be simple to address; one of applying an action like prescribed burning on an area of land..." (Northern Region Overview, page 8.)

The Overview recognized the importance of recreation throughout the Northern Region, this area is "... one of the most pristine in the country and attracts new residents and visitors because of its scenic beauty and wildness." (Northern Region Overview, pages 9 and 24) The whitebark pine ecosystem is a key factor in the scenic value and feeling of wildness within the Selkirk Mountains. Changes to the whitebark pine component and potential effects on recreation are discussed in detail in this environmental assessment.

C. North Zone Geographic Assessment

The Idaho Panhandle National Forests (IPNF) has been assessing the ecological conditions across the North Zone subbasins, including the Kootenai River subbasin (essentially the Bonners Ferry Ranger District). All drainages within the Whitebark Pine assessment area flow directly into the Kootenai River. All proposed treatments areas within the Whitebark Pine project area are identified as "Whitebark Pine Restoration" terrestrial integrity areas within the North Zone Geographic Assessment.

The defining characteristics of Whitebark Pine Restoration terrestrial integrity areas include:

- High elevation subalpine habitat types where historically whitebark pine played an important ecological role – historically they were either dominated by whitebark pine, or had the potential to carry a large whitebark pine component;
- Potential loss of whitebark pine threatens ecological integrity of these habitats;
- Whitebark pine is either currently declining significantly due to a combination of white pine blister rust, fire suppression, and mountain pine beetle, or has already declined so far that effective breeding populations are no longer present;
- Usually stringers and islands of ridgetop environments, often isolated geographically from similar habitats;
- Because of above factors, in significant parts of this environment, there is risk of local extinctions unless some change in current management takes place;
- Delineated as inclusions within other integrity areas. In these inclusions, whitebark pine is not given a separate integrity classification because, with the exception of the whitebark pine situation, the area shares many important characteristics with the surrounding integrity areas.

The management objectives that relate to the Whitebark Pine project area are focused on the restoration of whitebark pine communities. These recommendations include:

- Restore whitebark pine:
  - Use prescribed fire and mechanical activity to create small to moderate size openings adjacent to areas where whitebark pine seed sources are available;
  - Protect concentrations of potential whitebark pine seed trees when introducing disturbance;
  - When whitebark pine seed sources are not available adjacent to potential restoration sites, consider seed collection and tree planting using seed from natural seed trees that have been tested for blister rust resistance;
  - Where young whitebark pine is present, use thinning to favor it as a stand dominant.

- Where whitebark pine is being shaded out of mature stands by dense competing firs and lodgepole, use prescribed fire and mechanical treatment to provide sunlight around whitebark pine crowns.
- In the event of wildfire in areas appropriate for whitebark pine, whitebark restoration should be an important consideration in both fire response and post-fire planning.
- Implement whitebark pine restoration in a way that is consistent with other high resource values commonly found in these environments. This includes, but is not limited to, caribou habitat, grizzly bear habitat, sub-alpine rare plant communities, and roadless recreation opportunities.

D. Whitebark Pine Assessment Area

The assessments described above provide guidance for project level planning. A consistent theme among them is ecosystem restoration where the condition of the ecosystem is outside the historic range. This site-specific analysis provides the opportunities for restoring the historically whitebark pine dominated stands.

1.4 Proposed Action

The rapid decline in whitebark pine populations within the project area, and other locations throughout the west, has prompted a need for management action that would help maintain viable whitebark pine populations within the Selkirk Mountains. A proposed action was defined early in the project planning process. A description and a map of this proposal were included in the June 1, 2000 scoping letter for this project. This initial proposal would have treated about 11,000 acres and was designed to create adequate seedbeds for the establishment of natural or artificial regeneration of whitebark pine seedlings.

Four general areas were selected for treatment: Russell Ridge, Cascade Ridge, Farnham Ridge, and the Cutoff-Smith Peak area (refer to Figure 1-1). To create seedbeds a combination of partial slashing (cutting small diameter, understory trees) followed by broadcast burning was proposed. The partial slashing activities would be necessary for the creation of a continuous fuel bed that would allow for an effective continuous burn. In turn, the prescribed burning would provide site preparation conditions necessary for the natural planting of whitebark pine seeds by Clark's Nutcracker or artificial planting by people.

This proposal served as a starting point for the interdisciplinary team and gave the public and other agencies specific information on which to focus comments. Using these comments and information from preliminary analysis, the interdisciplinary team developed a Modified Proposed Action, identified as Alternative 2 in this document, and alternatives to the proposal, identified as Alternatives 3 and 4. These alternatives are discussed in detail in Chapter 2.

A. Alternative 2 – Modified Proposed Action

The proposed action described in the scoping letter was modified primarily because of the potential inability to effectively burn the proposed areas; the area to be treated was reduced from nearly 11,000 acres to about 7,266 acres. Treatment sites are located along the ridges

and divides of the Smith, Long Canyon, Fisher, Farnham, Trout, Ball, Burton, and Myrtle Creek watersheds.

Alternative 2 includes the following treatments:

4,527 acres treated with slash and burn applications,
278 acres treated with prescribed burning only,
739 acres treated with whitebark weed and release treatments, and
1,700 acres have been identified as secondary burn areas.

No road construction or reconstruction, nor any aquatic restoration projects are included in Alternatives 2, 3 or 4. More detailed information on the proposed action and alternatives is included in Chapter 2.

1.5 Scope of Project Analysis

The Whitebark Pine EA analyzes the environmental effects of the proposed action and various alternatives within the assessment area. It is the site-specific documentation for Forest Plan implementation. The proposed action provides the basis of a management strategy for the project area based upon the specific Forest-wide goals, objectives, and standards of the Forest Plan.

1.6 Policy Direction and Legal Guidance

A. Laws

Federal and state laws and executive orders pertaining to project specific planning and environmental analysis on federal lands are shown below. While most pertain to all federal lands, some of the laws are specific to Idaho. References to these laws and orders, as well as disclosures and findings required by them, can be found throughout this document and in the project file.

1) Federal and State Laws

- The National Environmental Policy Act (1970)
- The Clean Water Act (1948) and amendments (1972)
- The Clean Air Act (1955)
- The National Forests Management Act (1976)
- The Forest and Rangeland Renewable Resource Act (1974)
- The Archaeological Resources Protection Act (1979)
- The National Historic Preservation Act (1966)
- Idaho Forest Practices Act (1974) and amendments
- Multiple Use Sustained Yield Act of 1960
- Endangered Species Act of 1973 (as amended)
- American Indian Religious Freedom Act of 1980

2) Executive Orders

- Executive Order 11593 (protection and enhancement of the cultural environment)
- Executive Order 12898 (environmental justice)

- Executive Order 12962 (aquatic systems and recreational fisheries)

B. Natural Resource Agenda

On March 2, 1998, presiding Forest Service Chief Mike Dombeck announced the Forest Service Natural Resource Agenda. The Agenda provides a focus for the Forest Service, and identifies specific areas where there will be added emphasis. The four key areas identified are: 1) watershed health and restoration; 2) sustainable forest ecosystem management; 3) forest roads; and 4) recreation.

The Whitebark Pine project addresses the need to sustain the whitebark pine ecosystem and to maintain the unique qualities it provides to recreation in the Selkirk Mountains. This assessment also analyzed the potential effects to watershed health.

C. National Fire Plan

The National Fire Plan is a long-term investment that will help protect communities and natural resources. In August 2000, strategies to implement the plan were initiated. "Operating principles directed by the Chief of the Forest Service in implementing this [National Fire Plan] include: firefighting readiness, prevention through education, rehabilitation, hazardous fuel reduction, restoration, collaborative stewardship, monitoring, jobs, and applied research and technology" (from Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy, p.11-12).

Relationship to Whitebark Pine Restoration Project

The primary purpose of the Whitebark Pine project is to restore healthy, functional whitebark pine stands in a failing ecosystem within the Selkirk Mountains. In the Selkirk Mountains whitebark pines typically grow near the ridgetops above 6000 feet. These areas are usually located in unroaded, unpopulated areas. For this reason this is a restoration project but not a fuels reduction project, even though the primary treatments involve prescribed burning across several hundreds of acres. As a result of the project natural fuel loadings will be reduced, but the purpose of the prescribed burning is to provide adequate site preparation of the natural and artificial planting of whitebark pine seeds or seedlings.

D. Final Rule – Administration of the Forest Development Transportation System

In January 2001, Chapter 7700 of the Forest Service Manual was revised with a "Final Rule." This portion of the manual governs regulations concerning the management, use, and maintenance of the National Forest Transportation (Road) System. The revision de-emphasized the development of forest road systems and added a requirement for science-based roads analysis. The intent of the revision is "to help ensure that additions to the National Forest network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and finally, that unneeded roads are decommissioned and restoration of ecological processes are initiated," (36 CFR Part 212).

According to Forest Service Manual 7712.13 - Scope and Scale of Roads Analysis - projects proposing changes in access or activities that may result in adverse effects on soil and water resources, ecological processes, or biological communities must utilize a roads analysis. The Whitebark Pine project would be accessed and implemented almost entirely through use of helicopters. No road construction, reconstruction, or decommissioning would be required; therefore a roads analysis was not conducted.

E. Forest Plan Direction

The IPNF Land and Resource Management Plan (Forest Plan) provides direction for all resource management programs and resource activities on the IPNF. The Forest Plan consists of Forest-wide goals and standards as well as Management Area specific standards and guidelines that provide for land uses and resource outputs. It embodies the provisions of the National Forest Management Act (NFMA) of 1976 and its implementation regulations, as well as those of other guiding laws and documents, as listed in the federal and state laws section.

Three specific Forest Plan goals (USDA 1987, p. II-1 & II-2) guided development of the Purpose and Need. They are:

- Provide for a diversity of plant and animal communities.
- Provide efficient fire protection and fire use to help accomplish land management objectives.
- Manage the forest resources to protect against insect and disease damage.

Forest Plan Standards (USDA 1987, pp. II-32, II-39, and II-39) applicable to the general design of the proposed action are:

- Fire will be used to achieve management goals according to direction in management areas.
- Vegetation management will favor the use of fire, hand treatment, natural control, or mechanical methods whenever feasible and cost effective. Direct control methods, such as chemical or mechanical, may be used when other methods are inadequate to achieve control.
- Reforestation will normally feature seral tree species, with a mixture of species usually present. Silvicultural practices will promote stand structure and species mix that reduce susceptibility to insect and disease damage.
- Project design will provide for site preparation and slash hazard reduction practices that meet reforestation needs of the area.

The Forest Plan designated Management Areas (MAs) to guide the management of National Forest lands within the IPNF. Each MA provides a combination of activities, practices, and uses appropriate to the management goals and objectives of that specific management area.

The Whitebark Pine project area is comprised of lands in ten MAs and Riparian Habitat Conservation Areas (RHCAs); however, the bulk of the project area is comprised of five primary management areas. The primary management areas are MAs 2, 7, 9, 10, and 11.

Brief descriptions of the various MAs are listed below, along with their percentage within the total project area. This percentage is a measure of the total project area, not the percentage within treatment areas.

Treatment areas are discussed in alternative descriptions in Chapter 2. Figure 1-2 shows the general locations of the primary management areas. Management Areas are described in detail in the IPNF Forest Plan on pages III-1 through III-87.

Primary Management Areas

- MA 2: lands designated for timber production within identified grizzly bear habitat (11.9% of area).
- MA 7: lands designated for timber production within woodland caribou habitat (25.6% of area).
- MA 9: areas of non-forest lands, lands not capable of producing industrial products, lands physically unsuited for timber production, and lands capable of timber production but isolated by the above type lands or non-public ownership (18.0% of area).
- MA 10: areas managed for a semi-primitive recreation experience (20.8% of area).
- MA 11: existing and proposed wilderness areas managed to protect their wilderness character (13.6% of area). For the Whitebark Pine project, proposed wilderness (not existing) is included within project boundaries.

Other Management Areas

- MA 1: lands designated for timber production throughout the forest (0.3% of area):
- MA 3: lands designated for timber production within identified grizzly bear habitat and big game winter range (1.1% of area).
- MA 4: lands designated for timber production within big game winter range (less than 0.1% of area).
- MA 14: areas to be utilized for scientific research and includes existing and candidate Research Natural Areas and experimental forests (0.9% of area).
- MA 16: areas with important aquatic values including meadows, old growth, and cottonwood stands (0.5% of area).

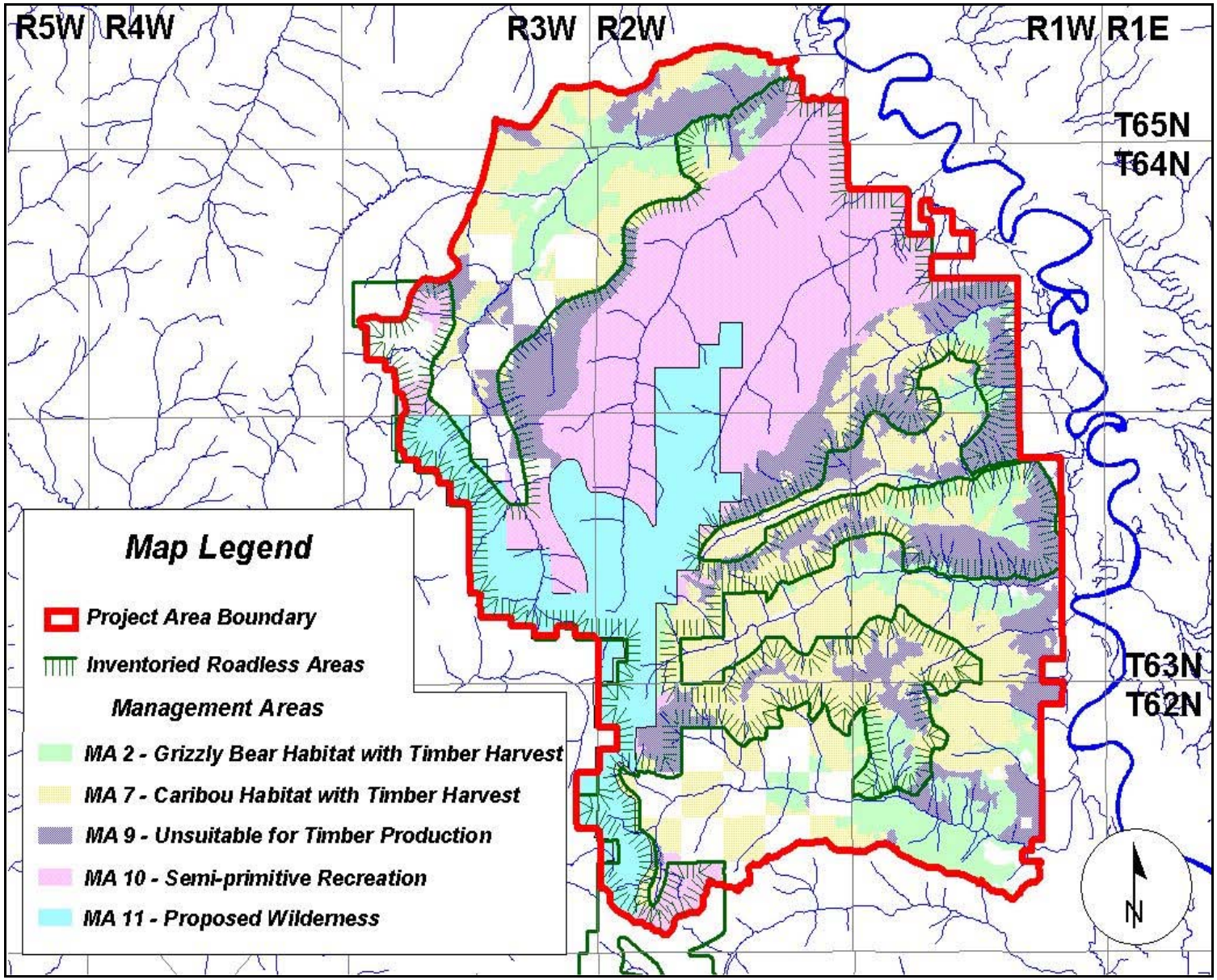


Figure 1-2. Management Area Map

1.7 Decision to Be Made

This Environmental Assessment (EA) is not a decision document. It discloses the environmental consequences of proceeding with any of the alternatives developed from the proposed action. The deciding officer will select an alternative based on the information in this document, public comments, financial considerations, and how well the preferred alternative meets the purpose and need of the project and complies with applicable state and federal laws, agency policy and Forest Plan direction.

Decisions to be made include whether to select the no action alternative or an action alternative and, if an action alternative is chosen:

- When proposed activities could begin and whether there are any timing restrictions;
- What type of vegetative treatments would occur and where;
- What type of fuels treatment would occur and where;
- What mitigation and monitoring activities would be required

Chapter 2 - Issues and Alternatives

2.1 Introduction

This chapter discusses the significant alternative-driving issues and lists the other issues that were analyzed, but did not warrant the development of separate alternatives. It also contains a description and general comparison of the alternatives considered in detail and a brief discussion of four other alternatives that were considered but eliminated from further study. The desired condition, purpose and need statements, and management area objectives identified in Chapter 1, in conjunction with the issues outlined in this chapter, provided the framework for development of alternatives.

2.2 Public Involvement

Scoping, an integral part of the environmental analysis process, was used to identify issues associated with the proposed action. It also helped establish the depth of analysis needed, marked the beginning of public involvement, identified environmental issues, aided in selecting an interdisciplinary team, explored possible alternatives and their effects, and defined task assignments.

Public scoping for this project was initiated in June 2000 when a scoping letter was mailed to interested individuals, public agencies, the Kootenai Tribe of Idaho, and various environmental groups. This project first appeared on the Quarterly Schedule of Proposed Actions in November 2000. The purpose and need was to maintain whitebark pine populations within the ecosystem.

Several environmental groups, the Kootenai Tribe of Idaho, and the Idaho Fish and Game responded to either the scoping letter or the Quarterly Schedule. Roughly half of the environmental groups included a list of additional concerns or requests that they would like to see addressed in the environmental assessment and requested that they continue to be informed throughout the assessment process. The comment letters are located in the project file as Public Involvement documents #3 through #8, #12, and #14 through #18.

Through numerous phone calls and meetings, one individual representing several groups, voiced opposition to any treatments within the Long Canyon drainage. Their primary concern is that this project could set precedence for management activities in Long Canyon and that the Forest Service would then propose timber sale projects in this area.

One other environmental group was pleased with the project proposal because it did not utilize timber harvest to meet the restoration objectives. Other groups only requested to remain on the mailing list for this project. The Kootenai Tribe of Idaho also requested to remain on any further mailings related to the project. The Idaho Fish and Game is supportive of the project.

2.3 Alternative Driving Issues

This section describes the alternative driving issues that were analyzed in detail. These issues were identified both internally and externally through the scoping process. The other resource concerns listed in this chapter were treated by changing the design of the alternatives, or by avoiding areas or certain activities. They did not warrant development of a separate alternative. These other resource concerns are listed on pages 2-4 and 2-5 and discussed in Appendix A.

A. Forest Composition and Structure

The majority of the whitebark pine stands within the project area are mature, with only limited amounts of young seedling and sapling sized stands. Aggressive fire suppression during the past 70 years contributed to this limited range of age classes and encouraged the growth of more shade tolerant species, primarily subalpine fir, to dominate these sites.

1) White Pine Blister Rust

Whitebark pine is extremely sensitive to white pine blister rust, which is now significantly and continuously reducing the whitebark pine population. On mature whitebark pine, blister rust usually kills the tops of the trees first, reducing or eliminating their seed producing potential. (Forest Plan Monitoring Report 2002, page 72).

All of the targeted stands have been infected with the white pine blister fungus for decades. This fungus affects five-needled pines of all ages. Over the past several decades thousands of whitebark pine trees have died from this disease throughout the project area. Even with the relatively high levels of mortality caused by the blister rust fungus an adequate number of healthy trees have persisted, due to a natural resistance to this disease. In turn, these healthy trees have provided a seed source for potentially blister rust resistant seedlings and continued natural regeneration of whitebark pine. Details of cone collection and screening for blister rust resistance are included in the 2002 Forest Plan Monitoring Report (Forest Plan Monitoring Report 2002, page 72).

2) Mountain Pine Beetle

Mountain pine beetles are typically attracted to the largest trees (greater than 5” in diameter) and they do not distinguish between blister rust resistant and non-resistant trees. This has led to the mortality of many otherwise healthy trees.

Recently, mountain pine beetle infestations have been killing whitebark pines in the Selkirk Mountains in alarming numbers. Aerial surveys in 1999 discovered a major mountain pine beetle outbreak. Ground surveys in 2002 and 2001 showed that the outbreak was very large, still growing and killing a high percentage of whitebark pine trees in some areas. The survey conducted in 2000 (internal communication, Kegley 10/17/00) showed the following conditions:

- Pyramid Pass -- 75% of the whitebark pine had been killed by mountain pine beetle, with 44% of the mortality occurring in 1999 and 2000;
- Russell Mtn -- 42% had been killed, with 28% in the last two years;
- Russell Ridge -- the mortality rate was 44%, with 25% in the last two years;
- Burton Ridge -- the mortality was 37% with 26% over the last two years.

Surveys conducted in 2001 at Trout Lake and Fisher Ridge revealed mortality of 8% and 22% respectively. By 2003, the mortality had increased to 37% and 39% respectively at these locations (internal communication, Kegley 08/19/2003.) In 2002, both the area of the beetle outbreak, and the number of trees killed continued to increase from what was seen in previous years. (Forest Plan Monitoring Report 2002, pages 72 and 73)

"Given the high rate of infection from blister rust, compounded by this mountain pine beetle outbreak, we are very concerned about the future of whitebark pine on this National Forest. The pattern we're seeing here looks similar to what previously happened in other areas of the Forest... where the combination of blister rust and mountain pine [beetles] has killed the overwhelming majority of the whitebark pine, and appears to have largely removed it as a functioning component of the ecosystem in those local areas." (Forest Plan Monitoring Report page 75)

Table 2-1 Principle Issues and Indicators – Forest Composition and Structure

Principle Issue	Principle Issue Indicators
Restoration of the Whitebark Pine Forest Type	Acres of forest treated that will lead to stands dominated by whitebark pine or that will create conditions favorable to the establishment of whitebark pine seedlings by the Clark's nutcracker.
Reintroduction of Fire into the Ecosystem.	Acres burned to allow for natural or artificial regeneration of whitebark pine seedlings.

B. Recreation Opportunities, Proposed Wilderness Areas, Associated Visual Quality

Much of the existing whitebark pine is located in and around popular recreational areas within the Selkirk Mountains. This includes the high elevation lakes and connecting trail systems in the Ball Creek, Trout Creek, Long Canyon, Fisher Creek, and Smith Creek drainages. Slashing and burning of ridgetops within view of these areas could disrupt recreational activities and alter visual quality.

Some of the whitebark habitat is located within the proposed wilderness management area (MA 11) found in Long Canyon and Trout Creek. While management for disease/insect infestations in these areas using prescribed fire is not precluded under Forest Plan direction, there is concern in some arenas about the appropriateness of using prescribed fire in roadless areas or proposed wilderness areas (project file documents: Public Involvement #3, #15, #17; and Yung, 2002, Prescribed Fire in Wilderness, page 1.) However, authority for manager-ignited fire in wilderness is delegated to Forest Supervisors who can grant approval for this use of prescribed fire as long as it is consistent with their Forest Plan (Yung, 2002, page 8.)

Specifically the IPNF Forest Plan standards for MA11 state, "Prescribed Fire. Identify specific areas where prescribed fire may be beneficial and cost effective in achieving the objectives of the management area." (Forest Plan page III-50.) Forest Plan objectives for Roadless Areas

are, "...managed based on the direction and goals established for the respective management area within which they are located." (Forest Plan page II-4)

Table 2-2 Principle Issues and Indicators – Recreation

Principle Issue	Issue Indicators
Protect wilderness values consistent with the Forest Plan direction.	Use of management-ignited fires in proposed wilderness.
Consistency with existing guidelines and closures developed under the Trout Creek project (Decision 5/4/95)	Physical, social and managerial factors: a) Physical remoteness and evidence of humans b) Social setting – Solitude while traveling and camping c) Impact to recreation features
Acceptability of changes to the recreation environment for those lands outside of the Trout Creek Area Recreation Project.	Physical, social and managerial factors: a) Physical remoteness and evidence of humans b) Social setting – Solitude while traveling and camping c) Impact to recreation features
Scenic integrity consistent with Selkirk "sense of place."	a) Physical and social impacts to the recreation experience as viewed from prominent viewpoints within the project area. b) Physical and social changes to the recreation experience as viewed from prominent viewpoints outside the project area.

C. Woodland Caribou Habitat

The Selkirk Mountain population is generally found above 4000 feet elevation in Engelmann spruce/subalpine fir and western red cedar/western hemlock forest types. They are highly adapted to upper elevation boreal forests and do not occur in drier low elevation habitats except as rare transients. Past timber harvest, fire suppression, and road building have reduced and fragmented habitat in the analysis area.

Issue indicators focus on the amount of suitable habitat that may be impacted by the proposed treatments. Potential changes can be measured the number of acres of seasonal habitats impacted by slashing/burning, thinning, or burning of stands within the caribou management units.

Table 2-3 Principle Issues and Indicators – Woodland Caribou

Principle Issue	Issue Indicators
Changes to seasonal habitats	Acres of suitable habitat treated in primary treatment areas. Acres of suitable habitat treated in secondary burn areas.

D. Water Resources and Aquatics Habitat

The primary watershed issue is the potential effect on the water quality. Vegetation treatments (including burning) can result in changes in water yield, increased erosion and sediment delivery to stream channels. Changes in concentrations of chemical water quality constituents, such as

nutrients, can also occur after vegetation treatment. Both increased sediment and nutrients in streams can degrade fish habitat and public drinking water supplies.

The potential effects of the treatments prescribed in each alternative are addressed in detail in Chapter 4. Table 2-4 defines the principle water resource issue and the indicators used to evaluate the effects of the proposed treatments.

Table 2-4 Principle Issues and Indicators –Water Resources

Principle Issue	Issue Indicators
Water Quality: Potential for increased runoff, erosion and sediment delivery to stream channels with associated increases in nutrient delivery.	a) Percent of area treated. b) Acres of sensitive landtype within treatment areas.

The primary beneficial use for Myrtle Creek is its role as the municipal water supply for the City of Bonners Ferry, Idaho. Residents of Bonners Ferry are concerned about the quality and quantity of their domestic water obtained from Myrtle Creek and its tributaries. Thus, water quality in the Myrtle Creek drainage is of specific concern.

E. Inventoried Roadless Area

Portions of the Whitebark Pine project area are within the Selkirk Roadless Area (01125). Alternatives 2, 3, and 4 propose slashing of small diameter trees, primarily subalpine fir, to create a fuel bed for prescribed burning, in the roadless area. No construction of new roads or reconstruction is proposed within the roadless area.

During analysis for the IPNFs Forest Plan, the Forest received 350 comments on the Selkirk Roadless Area. These comments were consolidated into the following six general statements:

- *The Selkirk Roadless Area contains Long Canyon – the last remaining roadless drainage on the Kaniksu.*
- *This roadless area is a large contiguous block of undeveloped land with many unique features, including large old growth trees and a variety of habitats from lowland to alpine.*
- *The area presents a unique opportunity to have wilderness which extends from the Kootenai Valley to the Selkirk Crest.*
- *The area contains important wildlife habitat, including habitat for at least two endangered species; wilderness designation will allow for better management of this habitat.*
- *The area does not lend itself to economic timber harvest because of high road development costs.*
- *The timber contained within the area is not needed for Boundary County's economy because it is insignificant in the context of the total timber needs of local mills.*

Table 2-5 Principle Issues and Indicators – Roadless Area

Principle Issue	Issue Indicators
Modification of Undisturbed Land	Acres of land modified by timber slashing and prescribed burning.
Road construction	Number of miles of new road construction.

2.4 Other Resource Concerns

The potential effects on resources listed below were analyzed and evaluated, but the interdisciplinary team and District Ranger did not feel that any of these issues warranted a separate alternative. These resource concerns are discussed in Appendix A.

Biodiversity
Biological Factors

Noxious Weeds
Wildlife Species: Threatened, Endangered, Sensitive, Management Indicator, Snag Dependent
Fish Species: Threatened or Endangered, and Sensitive
Plant Species: Threatened or Endangered, Sensitive, and Native
Neotropical Migrant Birds
Old Growth
Fragmentation
Linkages
Range Allotments

Social/Economic Factors

Cultural Resources
Economics/Community Stability
Scenic Integrity and Sense of Place (Visual Quality)
Public Health and Safety
Air Quality (Smoke management)
Effects on Minority Populations and Low-income Population
Minerals
Special Uses

2.5 Alternatives Eliminated from Detailed Study

Based on the alternative driving issues and other resource concerns described above, four alternatives were considered but eliminated from detailed study.

Under the **Original Proposed Action**, about 11,000 acres would have been treated. The tools to meet the purpose and need would have included partial cutting of small diameter trees to create a more continuous fuel bed, prescribed burning, and thinning.

This alternative was eliminated from detailed study for three primary reasons. In many of the stands the majority of the whitebark pine component was already dead and the nearest viable

seed sources were too far away to guarantee successful regeneration. This alternative also included many acres in remote locations, which would have created logistical problems during the implementation phase and would have created additional potential conflicts with recreation users in the Selkirk Mountains. Most of the proposed treatment areas included sections on northern exposures, which would have lead to questionable results during the burning phase. Typically, when the southern facing portions of the treatment areas are within a favorable burn window, the northern aspects would be too wet to obtain adequate site preparation. For these reasons the original proposed alternative was dropped from detailed study.

Under the **Wildland Fire Use Alternative**, some or all naturally ignited fires within the high elevation whitebark pine areas would have been allowed to burn. The results of this alternative would vary from year to year, depending on the weather and the location and number of starts. Most, if not all, of the stated purpose and needs would probably be met with this alternative. Under current management direction in the IPNF Forest Plan, suppression is the only tactic allowed throughout the assessment area.

A complete fire risk assessment and fire management plan would be needed before any wildfires are allowed to burn. For this reason the Wildland Fire Use Alternative was dropped from detailed study.

A **No Roadless Alternative** was proposed to treat only those whitebark pine stands that are not located in any inventoried roadless areas. This would allow treatment on only about 500 acres in Farnham, Trout, and Myrtle Creeks. The roadless areas typically contain the best stands in need of treatment because the majority of the better stands are located at the higher elevations within the roadless areas. These stands have an adequate component of live whitebark pine, or are close to viable seed sources, or both, and would thus have greater probability of successful natural regeneration. The Chapter 3 discussions of forest cover types by watershed show that three of the four drainages with the greatest amount of whitebark pine are also roadless, as follows: Parker Creek has 10% whitebark pine cover type, Long Canyon has 7%, Fisher Creek has 6%. The fourth drainage is Trout Creek, which is generally roaded only in the lower elevation of the watershed; the upper elevations containing the whitebark pine cover type are mostly unroaded; this drainage has 15% whitebark pine forest cover type. The roaded drainages range from 3% to 0% whitebark pine cover type.

The purpose and needs for the project would be met on a limited area, but not over a broad area of the capable whitebark pine ecosystem. Compared with the total acres treated under Alternatives 2, 3, and 4 (Table 2-9), this alternative would treat less than 30% of the acreage proposed in Alternative 4, 25% of the treatment in Alternative 3, and less than 10% of the treatment proposed in Alternative 2. The interdisciplinary team felt that not enough of the critical areas would be treated with this alternative to meet the objectives of maintaining whitebark pine and reintroducing the role of fire into the ecosystem; therefore, the No Roadless Alternative was dropped from detailed study.

A **Timber Harvest Alternative** was considered to evaluate the potential use of timber harvesting to meet the purpose and needs for this project. A large percentage of the whitebark pine stands are located in management areas not suitable or not designated for timber management. The entire project area is approximately 18% MA9, 20.8% MA10 and 13.6% MA11. Management Areas 9 and 10 standards state, “No regulated timber harvest.”

Management Area 11 standards include, “Timber harvest will not be permitted.” (Forest Plan pages III-44 and III-49)

The higher elevation sites have generally shallow soils with heavy concentrations of rock outcrops. Many of the potential trees to be cut are generally small and dead with relatively low commercial values. Even within management areas that allow timber harvest, logging would have to be accomplished with helicopters, which would make economic feasibility questionable, considering the low value of the material to be removed, the low volumes per acre that would be removed, and the flight distance to any existing landing locations.

For these reasons the interdisciplinary team felt that this alternative was not a viable method for meeting the purpose and needs, so it was dropped from detailed study.

2.6 Alternatives Considered in Detail

This section describes Alternative 1 “no action” and three “action” alternatives (2, 3, and 4), along with features common to the action alternatives.

All proposed treatments are designed to reduce the encroachment of subalpine fir, Engelmann spruce, and lodgepole pine within the stands that were historically dominated by whitebark pine. In stands with a good component of whitebark pine, encroachment by other species would be treated through chainsaw work. In the stands where the whitebark pine is currently only a minor component this work would be done through a combination of saw work and burning, or burning alone. The burning would create the proper site preparation for the natural or artificial planting of whitebark pine seeds or seedlings. These treatments are described in more detail below.

A. Feature Common to Alternatives 2 and 3

A burn-only treatment would be conducted in proposed wilderness within Management Area 11. To avoid potential conflicts in proposed wilderness, the interdisciplinary team decided to forego the slashing used for developing a drier fuel bed. Since no slashing would be done to dry out the proposed burn sites, a more intense ignition system, such as helitorching, would need to be employed. Helitorches dispense a thickened petroleum product that adheres to the fuels allowing for longer contact and greater efficiency than other typical ignition systems.

B. Features Common to Alternatives 2, 3, and 4

The following features, common to Alternatives 2, 3, and 4, are not listed in any order of importance.

1) Slashing and prescribed burning would be accomplished in stands where whitebark pine is no longer a major component, but where historically it was the dominant species. Slashing would involve the cutting of small diameter trees, primarily subalpine fir (generally less than 5 inches diameter at breast height.) No whitebark pine trees would be cut. The purpose of this cutting is to develop a continuous fuel bed that would allow for a larger window of opportunity during the prescribed burning phase of this project.

The amount and distribution of the slashing would be quite irregular, depending on site conditions. An estimated 10 to 15% of the small diameter submerchantable trees less than 5" in diameter, in 2- to 5-acre parcels, would be cut. The parcels would be randomly placed to cover roughly 25 to 50% of the units, as displayed on the alternative maps.

2) A whitebark pine release cutting is proposed in stands that contain adequate numbers of whitebark pine that are getting excessive competition from other species, including brush, subalpine fir, lodgepole pine, and Engelmann spruce. The areas include wildfires dating from 1943, about 1950, 1971, and 1994. The release work would be accomplished in either an irregular or a continuous pattern across the entire units. The purpose of the thinning is to reduce the competition with brush and other trees and make whitebark pine the dominant species. The residual slash is anticipated to be fairly light and would be left on site.

3) No firelines would be constructed under any of the alternatives. Natural barriers would be utilized, including ridgetops, rock outcrops, and similar features. For this reason the fires are expected to creep around outside of the actual planned ignition areas. Analysis of the proposed burn areas included a secondary burn area. This is the area, outside of the proposed unit, that could potentially burn before the fires go out. Several BEHAVE computer model runs were used to determine what this potential area may include. It is displayed as the secondary burn area on the alternative maps.

C. Alternative 1 - No Action

Selection of this alternative would defer all treatment activities at this time. None of the proposed slashing, prescribed burning, or whitebark pine release treatments would occur. No fuel treatments or prescribed burning would be implemented to restore vegetative composition and structure.

D. Alternative 2 – Modified Proposed Action

This alternative is a modification of the Proposed Action described above as eliminated from further study. Modifications were made to the Proposed Action primarily because of the potential inability to effectively burn units that contain a combination of south and north facing aspects. When the southern exposures, which contain the majority of the targeted whitebark pine stands, are in a condition to successfully prescribe burn, the northern exposures would typically be too wet. Conversely, if the northern aspects were in a condition to successfully prescribe burn, then the south aspects would be too dry to safely burn.

After these modifications were made, the Proposed Alternative was reduced from nearly 11,000 acres to 7,266 acres. This alternative includes the following treatments:

4,527 acres that would be treated with slash and burn applications,
278 acres treated with prescribed burning only, and
739 acres that would benefit from whitebark pine release treatments.
1,700 acres in the potential secondary burn area.

Secondary burn refers to the area surrounding the slash and burn, and burn only units that could potentially burn during the prescribed fire phase of the treatment, shown as the secondary burn area in the table below. Treatment sites are located along the Smith, Long Canyon, Fisher, Farnham, Trout, Ball, Burton, and Myrtle Creek ridgelines.

Table 2-6 Alternative 2 Treatments.

Treatment Area Name	Location (Watershed)	Number of Units and Total Size # ~ Acres	Prescription	Treatment Pattern {1}	Acres of Secondary Burn Area {2}	Maximum Affected Treatment Area (Acres)
Cutoff Peak	Cutoff and Canyon	3 ~ 445	Slash/Burn	Irregular	249	694
Long Canyon	Canyon	3 ~ 278	Burn Only	Continuous	174	452
Fisher-Farnham	Trout	1 ~ 1634	Slash/Burn	Irregular	479	2,113
Ball Lakes	Ball	1 ~ 621	Slash/Burn	Irregular	227	848
Russell Peak	Ball	1 ~ 260	Slash/Burn	Irregular	90	350
Burton Creek	Burton and Myrtle	1 ~ 108	Slash/Burn	Irregular	67	175
Burton Peak	Burton and Myrtle	4 ~ 330	Slash/Burn	Irregular	108	438
Myrtle Peak	Myrtle	1 ~ 639	Slash/Burn	Irregular	162	801
Myrtle Ridge	Myrtle	1 ` 490	Slash/Burn	Irregular	166	656
Trout Lake	Trout	1 ~ 351	WBP Release	Irregular	NA	351
Russell Ridge	Ball	1 ~ 64	WBP Release	Continuous	NA	64
Fisher Peak	Parker and Fisher	2 ~ 324	WBP Release	Irregular	NA	324
Total Acres		**5,544**			**1,722**	**7,266**

{1} Treatment Pattern – Irregular treatments would occur in all of the slash and burn units and most of the whitebark pine release areas. These treatments would focus on cutting the small diameter (less than 5 inch dbh) competing tree species (i.e. subalpine fir, lodgepole pine, Engelmann spruce) in irregular, 2- to 5-acre patches throughout the unit. Between 25 and 50% of the actual treatment area would be slashed and burned or released in these small patches. Continuous treatments include whitebark pine release OR aerial ignition across the entire unit.

{2} Secondary Burn Area – This area will not be ignited deliberately nor will fire be suppressed within this boundary. Fire may creep and occasionally run within this zone but will extinguish itself when it reaches unburnable barriers, change in fuels or topography, or when the weather moderates.

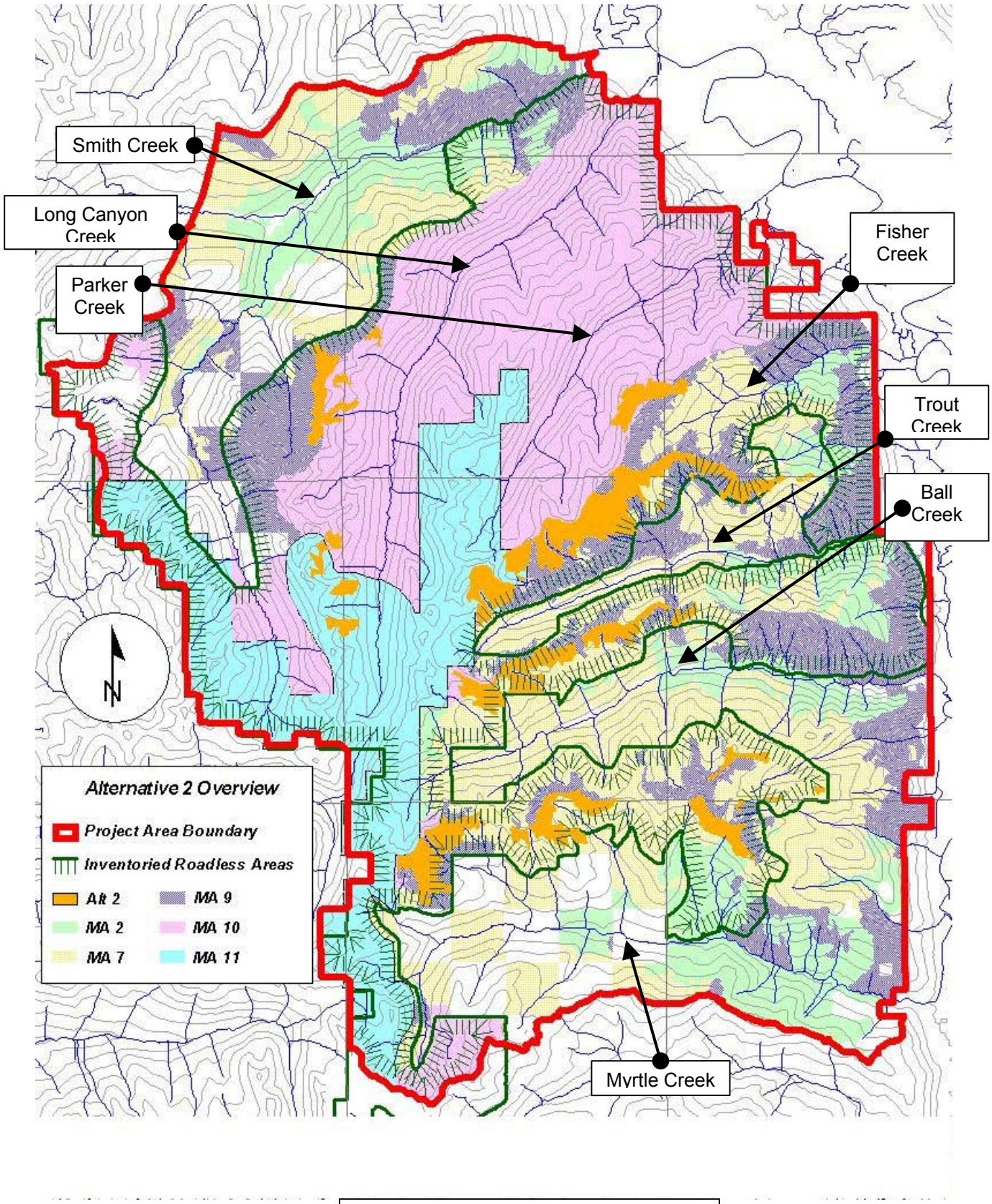


Figure 2-1. Alternative 2 Map

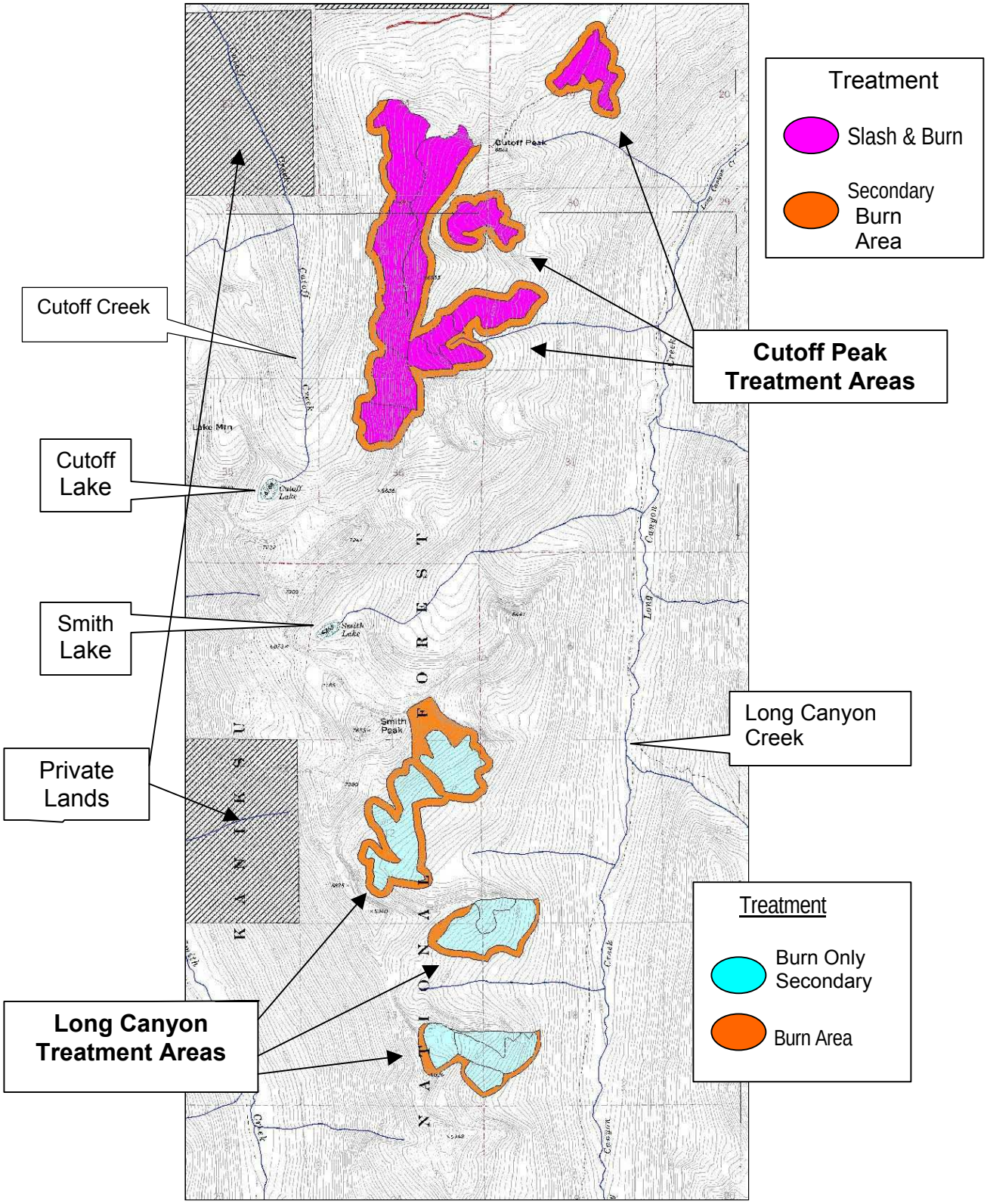


Figure 2-2. Alternative 2 Cutoff Peak and Long Canyon Treatment Areas

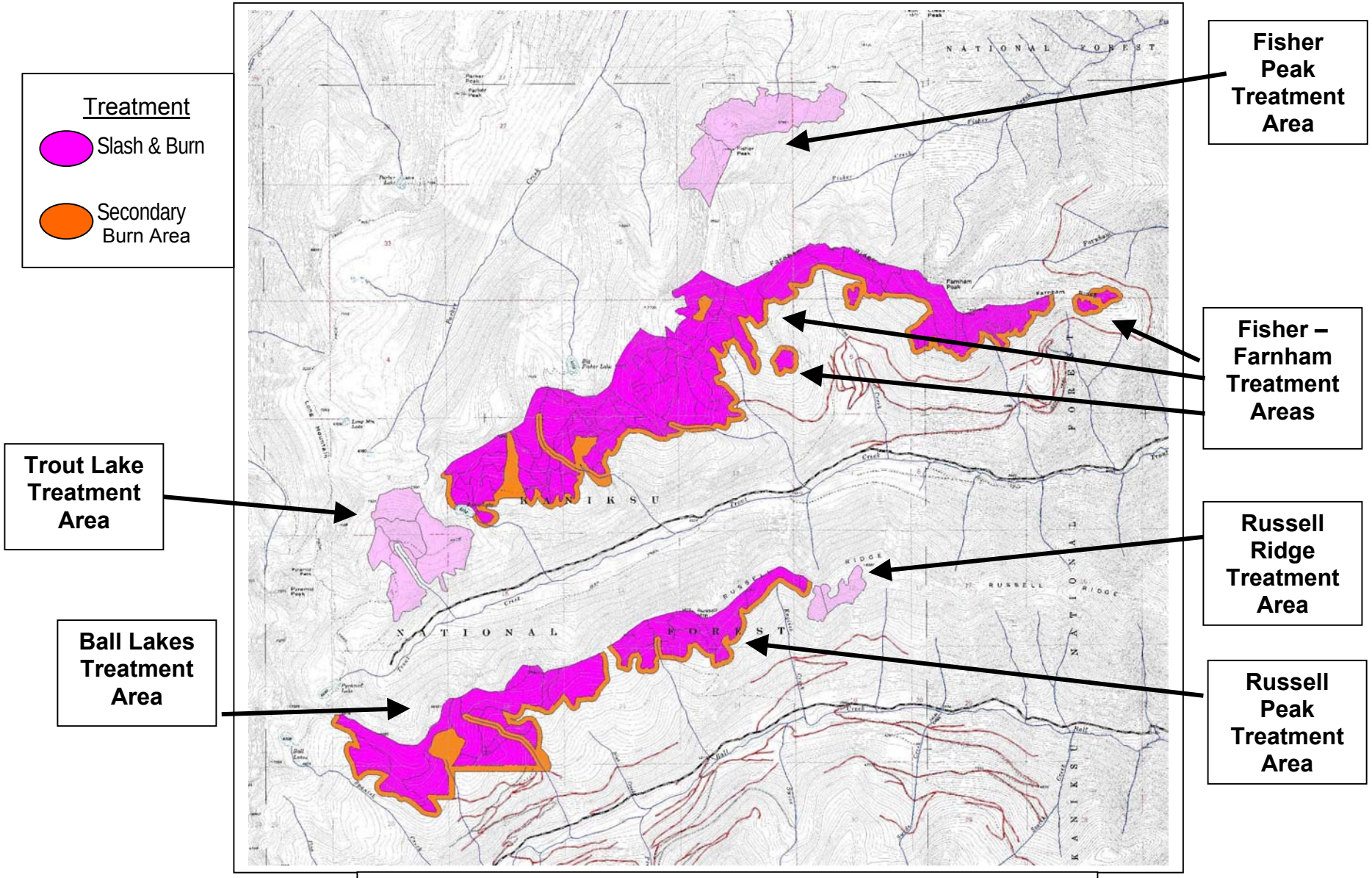


Figure 2-3. Alternative 2 – Trout, Fisher, Farnham, Ball and Russell Treatment Areas

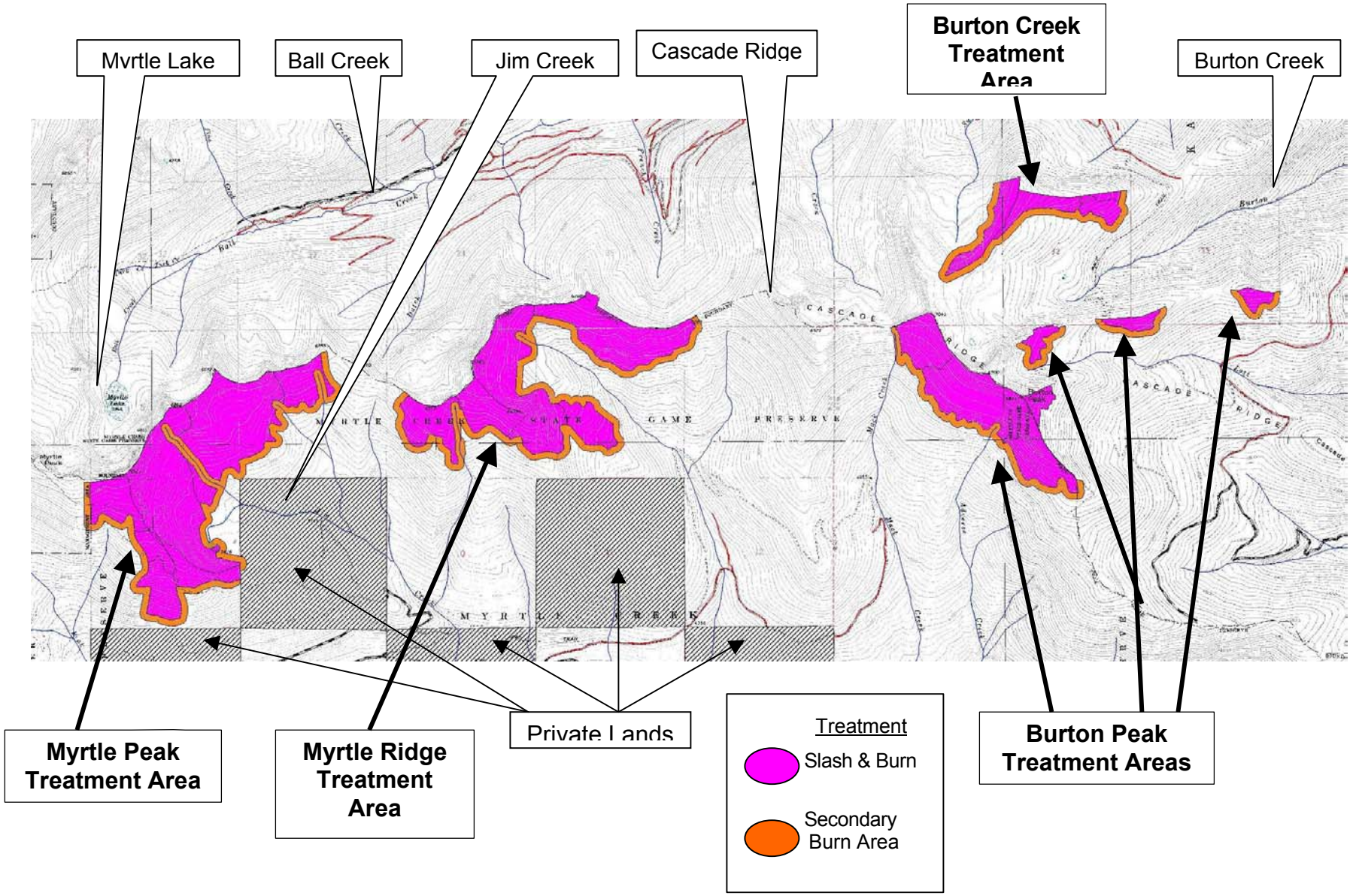


Figure 2-4. Alternative 2 – Myrtle and Burton Treatment Areas

E. Alternative 3

This alternative was developed to respond primarily to recreation, woodland caribou habitat, and municipal watershed concerns. A radical modification of Alternative 2, this alternative reduced the treatment acres from 7,266 acres to 2,062 acres.

Response to recreation concerns: The 350-acre whitebark pine weed and release treatment that would have encompassed Trout Lake and Trail #41 (Trout Lake and Big Fisher Lake) is not included in this alternative. This reduces potential effects on the trail, which would border only a small segment of the Big Fisher treatment area under this alternative. Reducing the area in the Fisher-Farnham treatments reduces potential impacts on Trail #27. Dropping the treatments in the Myrtle Creek watershed eliminated potential impacts on Trails #286 (Myrtle Peak) and #9 (Burton Peak).

Response to wildlife concerns: In currently suitable caribou habitat, this alternative drops a little more than 2300 acres of primary treatment areas and another 830 acres of secondary treatment. Alternative 3 would have considerably less influence on seasonal caribou habitats than Alternative 2. Alternative 3 would also have considerably less impact on lynx habitat. There would also be less disturbance and fewer acres of security loss for grizzly bear habitat. A notable change from Alternative 2 is that the Fisher-Farnham treatment area is split into two much smaller treatment areas: Big Fisher and Farnham Ridge. Since the Long Canyon treatment area would be treated by burning only (no mechanical treatment), there would be no security loss due to treatment.

Response to municipal watershed concerns: Alternative 3 eliminates 1459 acres of primary treatment and 436 acres of secondary treatment areas within the Myrtle Creek watershed.

This alternative includes:

1,045 acres of slash and burn treatments,
213 acres of burn only treatments, and
388 acres of whitebark pine release treatments.
400 acres of potential secondary burn area

Secondary burn refers to the area surrounding the slash and burn, and burn only units that could potentially burn during the prescribed fire phase of the treatment, referred to as the secondary burn area in the table below.

Table 2-7 Alternative 3 Treatments

Treatment Area Name	Location (Watershed)	Number of Units and Total Size # ~ Acres	Prescription	Treatment Pattern {1}	Acres of Secondary Burn Area {2}	Maximum Affected Treatment Area (Acres)
Cutoff Peak	Cutoff and Canyon Creeks	1 ~143	Slash/Burn	Irregular	46	189
Farnham Ridge	Trout Creek	1 ~ 196	Slash/Burn	Irregular	42	238
Long Canyon	Long Canyon	3 ~ 213	Burn Only	Continuous	119	332
Big Fisher	Trout Creek	1 ~ 165	Slash/Burn	Irregular	63	228
Ball Lakes	Ball Creek	1 ~ 203	Slash/Burn	Irregular	53	256
Russell Peak	Ball Creek	1 ~ 230	Slash/Burn	Irregular	60	290
Burton Ridge	Burton Creek	1 ~ 108	Slash/Burn	Irregular	33	141
Russell Ridge	Ball Creek	1 ~ 64	WBP Release	Continuous	N/A	64
Fisher Peak	Parker and Fisher Creeks	2 ~ 324	WBP Release	Irregular	N/A	334
Total Acres		**1,646**			**416**	**2,062**

{1} Treatment Pattern – Irregular treatments would occur in all of the slash and burn units and most of the whitebark pine release areas. These treatments would focus on cutting the small diameter (less than 5 inch dbh) competing tree species (i.e. subalpine fir, lodgepole pine, Engelmann spruce) in irregular, 2- to 5-acre patches throughout the unit. Between 25 and 50% of the actual treatment area would be slashed and burned or released in these small patches. Continuous treatments include whitebark pine release OR aerial ignition across the entire unit.

{2} Secondary Burn Area – This area will not be ignited deliberately nor will fire be suppressed within this boundary. Fire may creep and occasionally run within this zone but will extinguish itself when it reaches unburnable barriers, change in fuels or topography, or when the weather moderates.

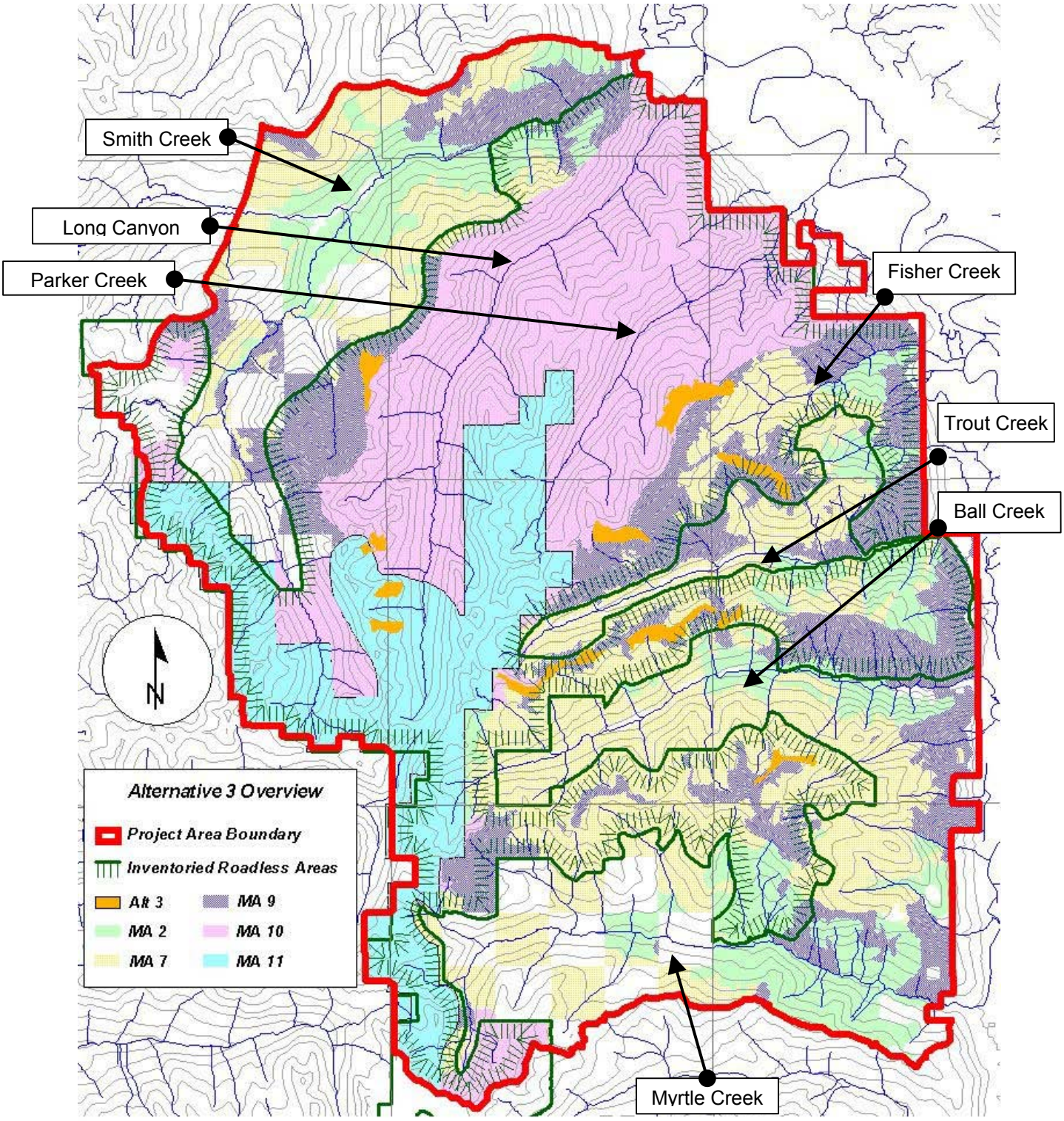


Figure 2-5. Alternative 3 Map

Figures 2-6 through 2-9, display the Alternative 3 treatment areas in detail.

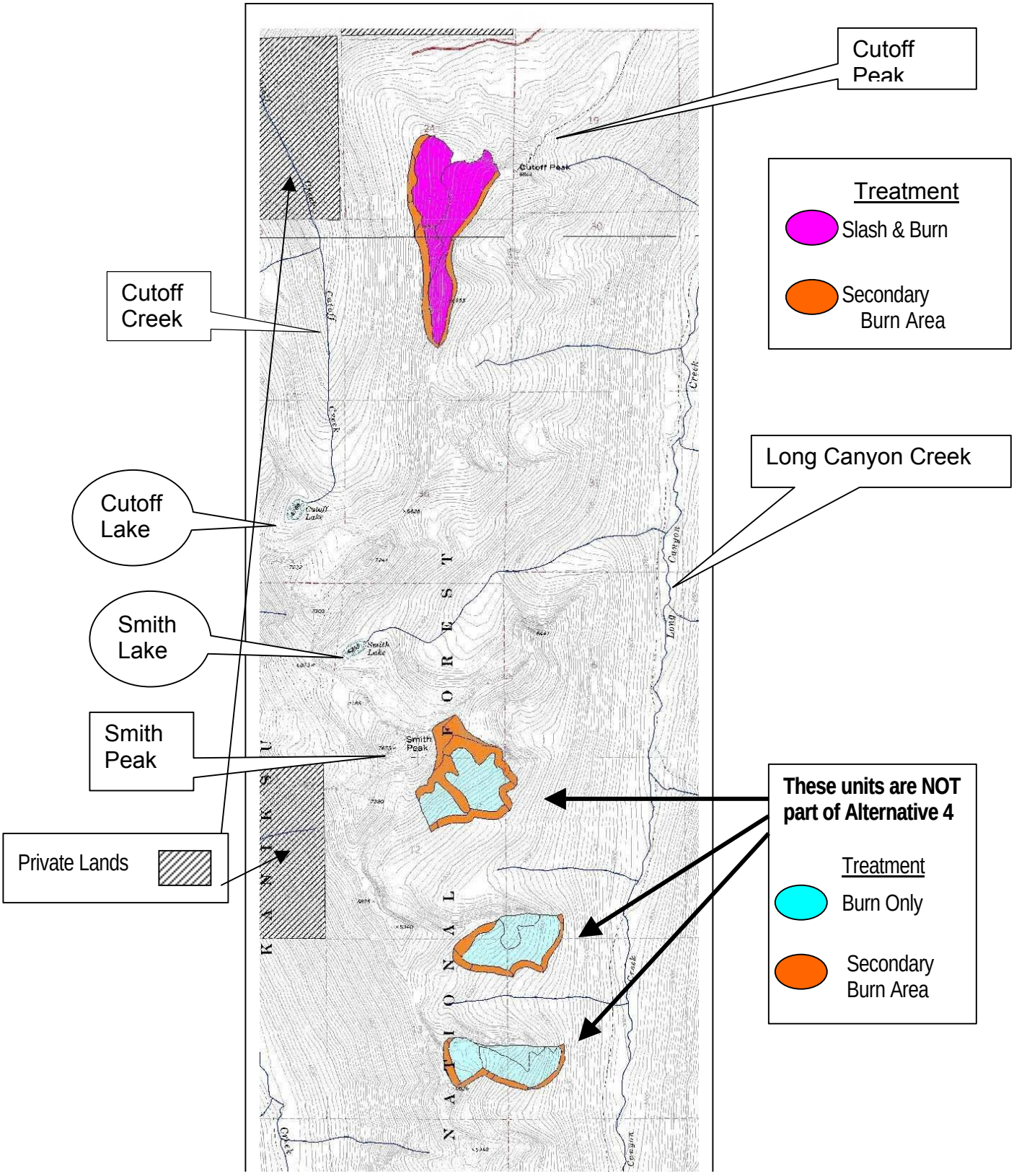


Figure 2-6. Cutoff Peak and Long Canyon Areas

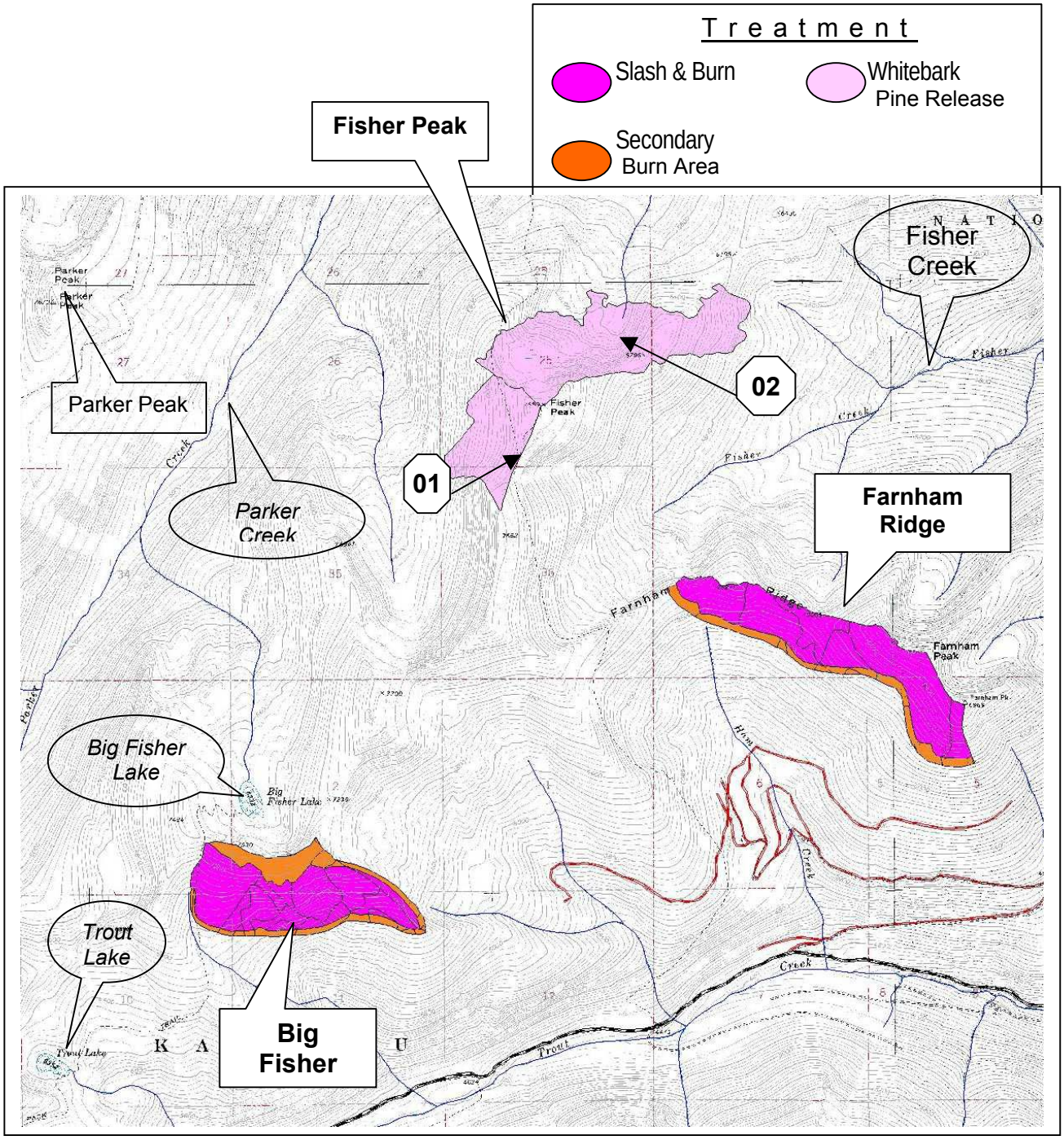


Figure 2-7. Farnham Ridge, Big Fisher, and Fisher Peak Areas

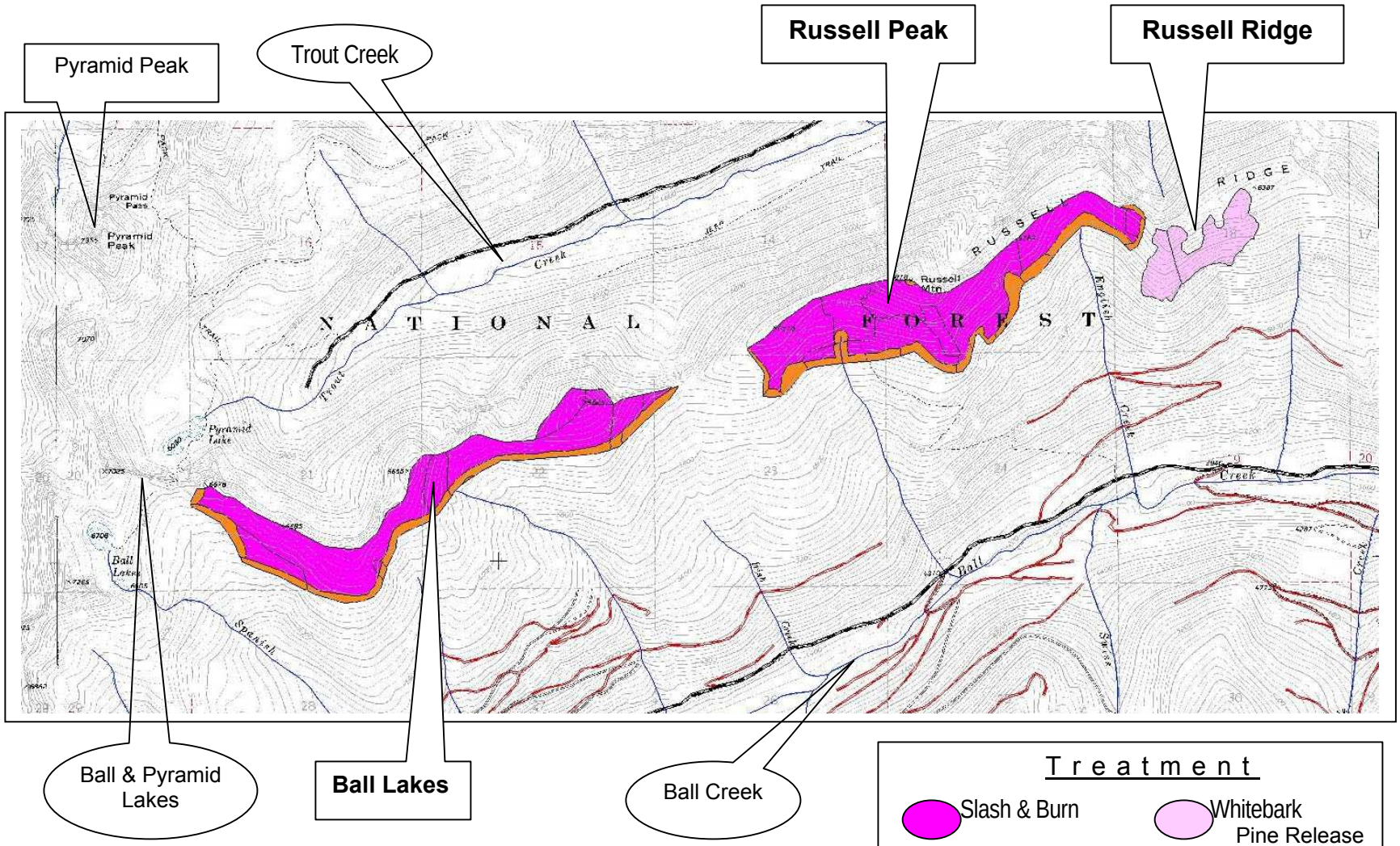


Figure 2-8. Russell Peak and Russell Ridge Areas

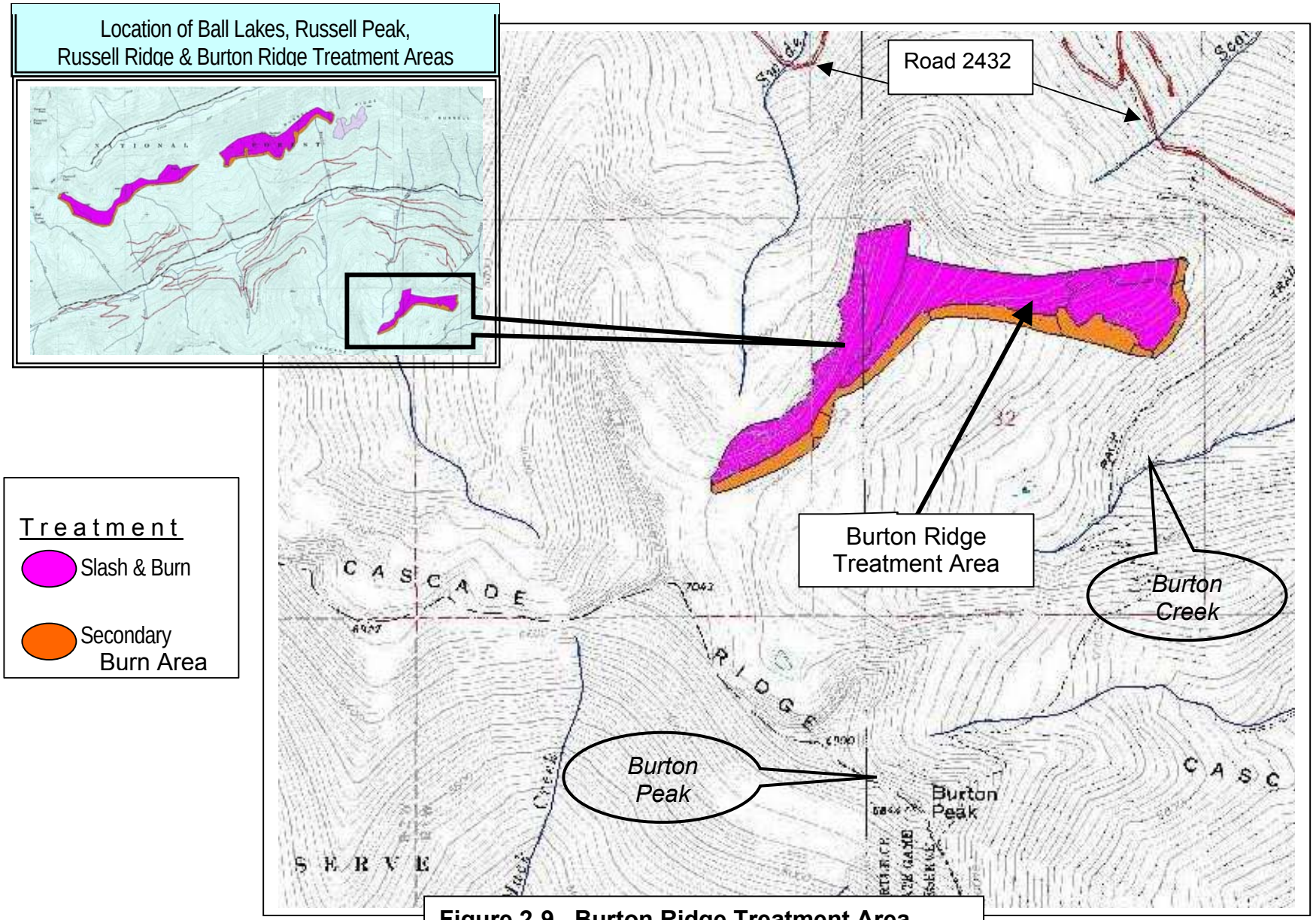


Figure 2-9. Burton Ridge Treatment Area

F. Alternative 4

This alternative was developed by the interdisciplinary team in response to concerns from individuals within the agency and from the public on any forest management within the proposed wilderness areas (Management Area 11). A modification of Alternative 3, this alternative eliminated the burn only treatment planned within Long Canyon Creek and reduced total treatment acres from 2,062 acres to 1,730 acres.

This includes the following treatments:

1,045 acres of slash and burn treatments,
388 acres of whitebark pine release treatments, and
0 acres of burn-only treatment.
297 acres of potential secondary burn area.

Secondary burn refers to the area surrounding the slash and burn, and burn only units that could potentially burn during the prescribed fire phase of the treatment, referred to as the secondary burn area in the table below.

Table 2-8 Alternative 4 Treatments.

Treatment Area Name	Location (Watershed)	Number of Units and Total Size #~ Acres	Prescription	Treatment Pattern {1}	Secondary Burn Area {2}	Maximum Affected Treatment Area (Acres)
Cutoff Peak	Cutoff and Canyon Creeks	1 ~ 143	Slash/Burn	Irregular	46	189
Farnham Ridge	Trout Creek	1 ~ 196	Slash/Burn	Irregular	42	238
Big Fisher	Trout Creek	1 ~ 165	Slash/Burn	Irregular	63	228
Ball Lakes	Ball Creek	1 ~ 203	Slash/Burn	Irregular	53	256
Russell Peak	Ball Creek	1 ~ 230	Slash/Burn	Irregular	60	290
Burton Ridge	Burton Creek	1 ~ 108	Slash/Burn	Irregular	33	141
Russell Ridge	Ball Creek	1 ~ 64	WBP Release	Continuous	N/A	64
Fisher Peak	Parker and Fisher Creeks	2 ~ 324	WBP Release	Irregular	N/A	324
Total Acres		**1,433**			**297**	**1,730**

{1} Treatment Pattern – Irregular treatments would occur in all of the slash and burn units and most of the whitebark pine release areas. These treatments would focus on cutting the small diameter (less than 5 inch dbh) competing tree species (i.e. subalpine fir, lodgepole pine, Engelmann spruce) in irregular, 2- to 5-acre patches throughout the unit. Between 25 and 50% of the actual treatment area would be slashed and burned or released in these small patches. Continuous treatments include whitebark pine release OR aerial ignition across the entire unit.

{2} Secondary Burn Area – This area will not be ignited deliberately nor will fire be suppressed within this boundary. Fire may creep and occasionally run within this zone but will extinguish itself when it reaches unburnable barriers, change in fuels or topography, or when the weather moderates.

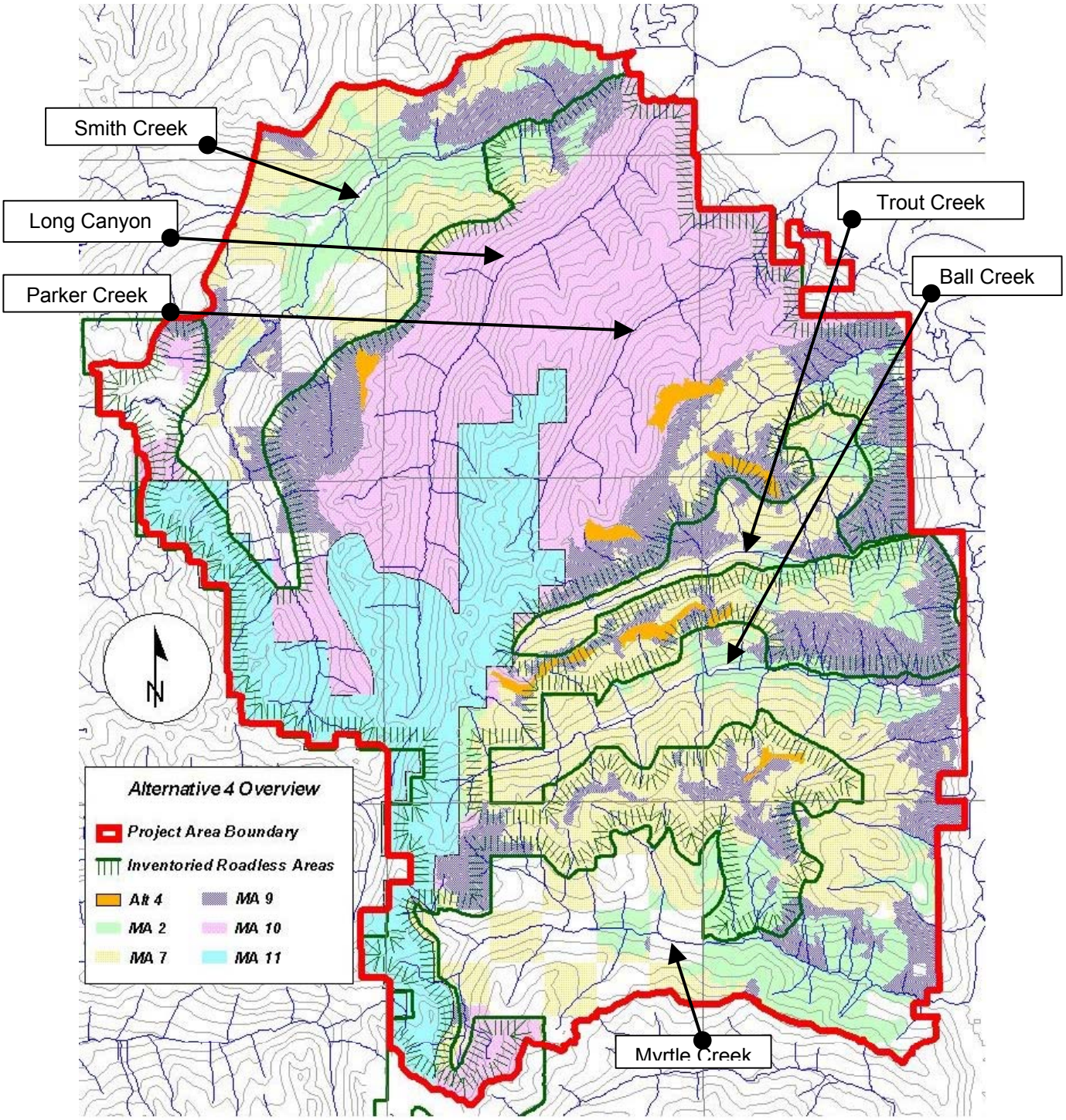


Figure 2-10. Alternative 4 Map

The detailed "treatment area" maps for Alternative 4 are the same as those for Alternative 3, except for the units in Long Canyon which are not proposed for burning in Alternative 4. They include Figures 2-6 through 2-9.

2.7 Comparison of Alternatives

Table 2-9 summarizes the proposed treatments for the Alternatives 1, 2, 3, and 4. A summary comparison of issues and alternatives is provided in Table 2-10.

Table 2-9 Summary of Proposed Treatments for each Alternative

Treatment Type	Alt 1	Alt 2	Alt 3	Alt 4
Slash and Prescribed Burn				
Irregular with 2- to 5-acre groups	0	4,527	1,045	1,045
Prescribed Burn Only				
Continuous	0	278	213	0
Secondary Burn Area				
Potential Burn Acres	0	1,722	416	297
Whitebark Pine Release				
Irregular with 2- to 5-acre groups	0	675	324	324
Continuous	0	64	64	64
Total Acres Treated	**0**	**7,266**	**2,062**	**1,730**

Table 2-10 Summary Comparison of Issues and Alternatives

Issue	Alt 1	Alt 2	Alt 3	Alt 4
Forest Composition and Structure				
Acres* of treatment that will lead to stands dominated by whitebark pine.	0	5,544	1,646	1,433
Acres* burned to allow for natural or artificial regeneration of whitebark pine seedlings.	0	4,805	1,258	1,045
**Both of these indicators exclude the potential secondary burn areas.*				
Recreation and Proposed Wilderness				
Use of management-ignited fires in proposed wilderness.	None	Yes	Yes	Yes
Acres of burn-without-slash treatments in proposed wilderness	0	278	`65	0
Acres of possible secondary burning in proposed wilderness	0	174	65	0
Acres of whitebark pine-release treatments in proposed wilderness	0	351	0	0
Woodland Caribou				
Acres of suitable habitat treated in primary treatment areas	0	2,967	650	466
Acres of suitable habitat treated in secondary burn areas	0	1,014	187	146
Watershed and Aquatics Habitat				
Percent of Area Treated	0	5.1	1.5	1.2

Issue	Alt 1	Alt 2	Alt 3	Alt 4
Acres of sensitive landtype within treatment areas	0	241	51	12
Roadless Area Activities				
Acres of timber slash and burn treatment	0	4,725	0	1,046
Acres of timber slash and burn, or burn without slash pretreatment	0	0	1,258	0
Acres of potential secondary burn	0	1,548	416	296
Acres of whitebark pine release treatments	0	739	384	384

2.8 Required Design Criteria for All Action Alternatives

The following specific criteria must be applied during project implementation if an action alternative is selected. These requirements also apply to all activities associated with this project. The purpose of these measures is to completely avoid, or to the fullest extent possible, minimize the potential for adverse effects to the resources discusses below. The effects analysis assumes their implementation.

A. Cultural Resources

Assure protection of any encountered cultural sites (such as lookouts and cabins), survey monuments, and trail corridors.

Protect the route of Russell Trail 179 by buffering slashing operations. The prescribed fire treatments will be conducted without the use of either hand- or machine-constructed firelines. Mark marginal system trails prior to work activities. Reestablish mainline trails at the end of the project.

Historic cabins and lookouts near Cutoff Peak, Russell Peak, Fisher Peak and elsewhere will be protected as necessary through appropriate treatments before prescribed burning takes place and through the use of buffer zones during burning operations.

Estimated Effectiveness – High. Contract provisions for protection of cultural resources are utilized in all contracts and have been effective in protecting cultural resources. For work performed by Forest Service employees, effectiveness is also expected to be high. (2000 Forest Plan Monitoring Report, Summary of Findings, pages 2 and 22)

B. Noxious Weeds

Within the project area, monitor for noxious weeds in helispots, along trails, and at campsites used for project implementation. Any treatment of existing weeds would be performed according to guidelines established in the Bonners Ferry Noxious Weed Management Projects FEIS and ROD (USDA 1995).

Estimated Effectiveness -- For new weed invaders, the estimated effectiveness of the above measures is high; the measures are expected to be very effective at preventing establishment of new invaders. For existing infestations generally confined to road prisms, estimated effectiveness is moderate to high; the measures are expected to be somewhat to very effective at reducing the spread of these in the project area. Estimated effectiveness is expected to be low in portions of the project area where existing infestations are already established in natural openings away from existing and proposed roads. Estimated effectiveness is based on results of weed monitoring in recent timber sales where such measures were implemented (see project file.)

C. Public Health and Safety

1) Slashing and thinning activities would be coordinated to ensure public safety and reduce noise in areas with high recreation values (i.e. trails and lookouts). Prior to and during burning activities, a variety of public announcements would be used to inform the public of helicopter ignition activities. News articles would be sent to regional newspapers and radio stations and posted on the IPNF public information internet site. Trailheads and roads would be monitored and contacts made with forest visitors prior to activities. Information leaflets could be distributed to local hunting license vendors. Signs would be posted at key locations. Consider each treatment area individually to determine the best way to communicate safety advice to the public. Notify Outfitter-Guides and Special Use permittees prior to implementation.

Estimated Effectiveness: Moderate. Fall burning on the Bonners Ferry Ranger District is usually conducted after Labor Day and as late as November, a season of relatively low recreation use in the Selkirk Mountains. Due to the characteristics of the recreation use in the treatment areas, the wide variety of public outreach methods will increase the effectiveness in reaching potential recreationists.

2) Treatment areas will be burned in the late fall (September-October) when the risk of escape into adjoining stands and damage to the residual timber is reduced. Restrictions on prescribed burning for local air quality reasons would be implemented by the Bonners Ferry Ranger District as required by the smoke management monitoring unit.

Estimated Effectiveness: High. Prescribed burning is conducted only when the fuel moistures, current and predicted weather, and other factors are within the “burning window” for a specific proposed burn. The Idaho Division of Environmental Quality recognizes the North Idaho Smoke Management Memorandum of Agreement (1990) as the best available control technology for prescribed burning. This mitigation has a high degree of effectiveness to keep air pollution from smoke at acceptable levels and ensure that air quality standards would be met.

D. Soils

Soil moisture must be a minimum of 25 percent prior to initiation of prescribed burning of slash. The purpose of this requirement is to avoid creating hydrophobic soils and to maintain the productive and protective soil organic layers.

Estimated Effectiveness – High. The Bonners Ferry Ranger District conducts the slash disposal and prescribed burning. Specifications regarding timing of these activities are included in slash

disposal and Prescribed Burn Plans. Past monitoring and research have shown these measures are effective in protecting soil productivity.

E. Vegetation

1) No slashing would be conducted within Riparian Habitat Conservation Areas (RHCAs).
2) There would be no construction of hand line or machine line for fire control.

Estimated Effectiveness: High. Treatments are generally located on ridgetops and some portion of the upper valley slopes and are expected to be effective in staying out of RHCAs. The prescribed burns will be conducted without construction of hand line or machine line.

F. Watershed and Fisheries

Management measures listed under Alternative D of the Inland Native Fish Strategy (INFS) are applied to all proposed or new projects and activities. This strategy is intended to reduce the risk of population loss and potential negative impacts to aquatic habitat. All of the appropriate INFS standards will be applied to all activities within the project area.

In drainages in which landtype 334 occurs, stream buffers will be extended to a break in slope in order to ensure the stream channel would not be affected.

Estimated Effectiveness: Generally high; a description of each applicable INFS standard and guideline and its estimated effectiveness may be found in Appendix B. These requirements would be implemented since they are incorporated into project design.

G. Wildlife

No whitebark pine trees (live or dead) would be cut, except those that are determined to be hazardous during slashing operations.

Estimated Effectiveness: Moderate to High. All proposed alternatives would meet or exceed Forest Plan goals/objectives for managing snag habitat (Forest Plan Appendix X).

Management activities within Grizzly Bear Management Units would be coordinated to assure that requirements for secure habitat and core areas are met.

Estimated Effectiveness: High. Assurance to these standards are met through the annual work activities planning process and consultation with the US Fish and Wildlife Service pm the yearly Biological Assessment: Administrative Activities on Restricted Roads (USFS 2003)

H. Recreation

1) Slashing shall use the following guidelines to minimize effects:
- Stumps on the uphill side of trails should be 4 inches or shorter and as flat as practical.
- As topography permits, activities shall be out of sight of trails, peaks, viewpoints, and lakes by using natural buffers (vegetative screens and topographical breaks) and maintaining a minimum 00-foot buffer for focal points.
- Slash areas in irregular shapes; avoid squares or perfect circles.

Estimated Effectiveness: Generally high. Whether the work is completed under a contract or performed by the Bonners Ferry Ranger District specifications regarding slashing would be followed.

2) Crew camps will follow these guidelines:
- Within the Trout Creek Recreation Project area, use existing campsites as much as practical. In areas where campsites do not exist, or in areas outside the Trout Creek Project, locate campsites away from trails, peaks, viewpoints, lakes, etc.
- Use the most restrictive low-impact guidelines in all cases.
- Rehabilitate any camp area or cutoff trail made during restoration work.

Estimated Effectiveness: Generally high. Whether the work is completed under a contract or performed by the Bonners Ferry Ranger District specifications regarding camping would be followed.

3) Timing of Management Activities:
- Schedule work, as much as practical, for off-recreation season; primarily after Labor Day.
- Schedule helicopter use, as much as possible, for Mondays through Thursdays.
- Use existing helispots.

Estimated Effectiveness: Generally high. Whether the work is completed under a contract or performed by the Bonners Ferry Ranger District specifications regarding camping would be followed.

2.9 Reasonably Foreseeable Future Actions

The following are ongoing and reasonably foreseeable future activities in the assessment area. They are the result of policy or previous decisions and will occur with or without the implementation of any alternative, including the no action alternative.

1) Firewood Gathering – Firewood gathering will occur within the assessment area, but will not occur in any of the proposed treatment areas. The cutting of firewood is allowed only along open roads.

2) Treatment of Noxious Weeds - Noxious weed treatment, as conducted under the guidelines established in the Noxious Weed Management Projects FEIS for the Bonners Ferry Ranger District, is done primarily along roadsides, but is also permitted along segments of specific trails

and within some past harvest units. The list of treatment areas is contained within Appendix A of the Noxious Weed Management Projects FEIS; a copy of this appendix is located in the Whitebark Pine Restoration EA project file.

3) Routine Trail Maintenance - The Bonners Ferry Ranger District performs annual routine trail maintenance throughout the assessment area. This includes a variety of jobs including clearing downed logs, repairing segments of bad tread, improving drainage structures, replacing bad timbers in bridges and corduroy, repairing signs, and similar tasks.

4) Timber Stand Improvement - Several different types of timber stand improvement activities will occur throughout the assessment area associated with other previously implemented projects. This work will include precommercial thinning (the thinning of small diameter trees that do not have any commercial value), white pine pruning, and planting.

5) Myrtle Cascade FEIS/ROD Timber Sales - Three separate timber sales, analyzed in the Myrtle Cascade FEIS, were sold in fiscal year 2001. They include Big Mack, Mama Cascade, and Salt Lick. Alternatives 3 and 4, of the Whitebark Pine Restoration EA, do not include any proposed treatments within the Myrtle or Cascade Creek drainages. Alternative 2 includes several hundred acres of proposed treatment in these two drainages, but none is located near any of the existing harvest units.

6) Bonners Ferry Ranger District Small Sales EA - The Bonners Ferry Ranger District is currently developing an environmental assessment for small salvage opportunities across the district. The areas identified for potential salvage primarily include areas along open roads and within existing harvest units. The areas identified in the Whitebark Pine Restoration project are near ridgetops, away from open roads, on sites that would not typically be identified as areas for timber salvage.

7) Private Timberland Activities - No large-scale timber harvest is planned on Forest Capitol's private industrial forestlands, between now and 2008. Pre-commercial thinning may occur on their land in Section 9, T62N, R2W.

Chapter 3 Affected Environment

Introduction

This chapter describes the current condition of the resources related to the alternative driving issues. These issues represent components of the environment that could be affected by the alternatives if they were implemented. The existing condition of the components described in this chapter are also pertinent to the other concerns and public issues listed in Chapter 2 and described in Appendix A.

3.1 Forest Composition and Structure

Introduction

The vegetation in northern Idaho is a result of the prevailing climatic pattern in which westerly winds carry maritime air masses from the northern Pacific Ocean across the northern Rocky Mountains. The inland maritime airflow provides northern Idaho with abundant moisture and moderate temperatures.

The lands in the analysis area are composed of a wide range of vegetation in various structural conditions. The vegetation has changed and will continue to change through time. Various influences contributed to these changes, both natural and man-caused.

A. Ecosystem Setting

1) Columbia River Basin Scientific Assessment

Based on recent findings presented in the Scientific Assessment for the Interior Columbia Basin Ecosystem Management Project (ICBEMP), disturbances such as those related to fire and insect mortality have played an important role in determining forest composition throughout the Interior Columbia River Basin. Within northern Idaho the most significant historic natural disturbance was fire. In addition to natural disturbance, the Assessment found that land management activities and introduced pathogens have dramatically altered the species and age composition of vegetation resulting from the natural disturbance regimes.

The vegetation composition was historically dominated by fire adapted, shade-intolerant species. Ponderosa pine, western larch, and western white pine dominated the low and mid-elevation sites, while whitebark pine was an important species on the very high elevation sites. These long-lived tree species were typically established after some form of disturbance and have the potential to occupy a site for 200 to 300+ years.

Many of the local disturbance regimes not only initiated these long-lived species, but also maintained them in mature conditions. Stands of these trees were adapted to regenerate

and survive local fire regimes. Historic levels of insect populations, along with wind and winter storm damage, contributed to stand mortality and over time created conditions for large stand-replacing fires.

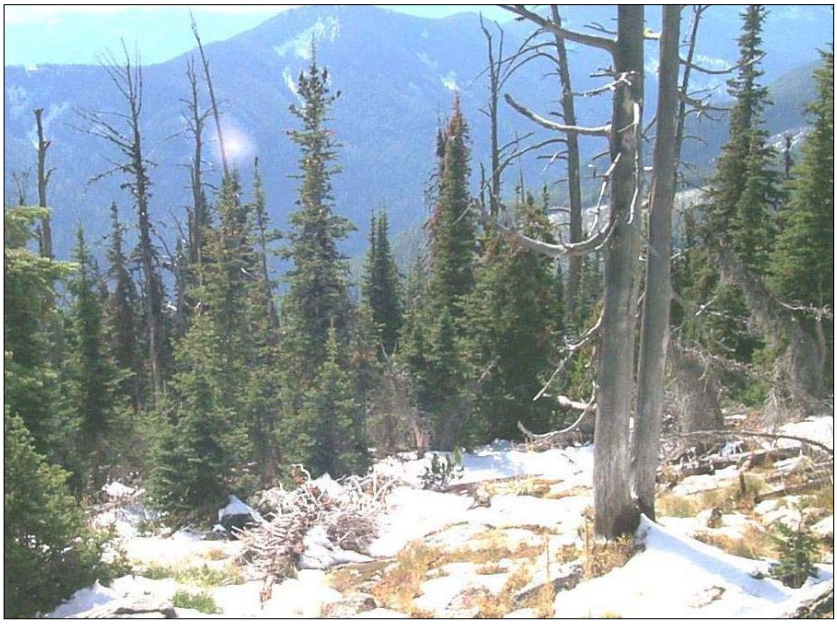


Figure 3-1. View from Farnham Ridge, looking south/south-west, showing the heavy mortality in the whitebark pine trees, from the blister rust fungus and mountain pine beetles, and the ingrowth of subalpine fir.

With the loss of much of the white-bark pine and western white pine due to the introduced blister rust fungus, effective fire suppression, and land management activities such as logging, the character of the forest has changed.

The forest is now dominated by shade-tolerant grand fir, hemlock, Douglas-fir, and subalpine fir. These tree species are more vulnerable to diseases, insects, and fires than the fire adapted, shade-intolerant species. They are less adapted to fire, drought, and natural climatic variability than the species they replaced. The results are more insect and disease problems and higher fire risk.

At the high elevations, whitebark pine fills many unique roles. Its large seeds are an important food source for grizzly bears, squirrels, and some bird species. It grows in a severe environment where from only one to three other tree species can even survive, and thus provides an important element of biodiversity. At the very highest elevations, it provides tree cover in an environment where other tree species cannot grow well, if at all. The loss of whitebark pine represents loss of a food source and habitats for a number of wildlife species and a significant reduction in biodiversity on high elevation sites.

2) Kootenai River Subbasin Geographic Assessment

The Idaho Panhandle National Forests is in the process of completing a Geographic Assessment for the northern three districts of the IPNF because of local variations in the landscape throughout the Columbia Basin. Referred to as the North Zone Geographic Assessment (NZGA), it is divided into three subbasins - Pend Oreille (Sandpoint Ranger District), Priest River (Priest Lake Ranger District), and Kootenai River (Bonners Ferry Ranger District) – in recognition of local variation.

The purpose of the North Zone Geographic Assessment is to develop a scientifically based understanding of the processes and interactions occurring in the three subbasins, so that activities can be developed to promote healthy ecosystems. Findings within the NZGA are consistent with the findings of the ICBEMP.

The whitebark pine assessment area is located within the Kootenai River subbasin. Throughout this chapter, comparisons between current conditions and the historic conditions identified in the NZGA were used to characterize the Whitebark Pine analysis area.

Findings in the North Zone GA (draft in progress) concerning vegetation disturbance are very similar to the more broad-scale conclusions found at the Columbia River Basin scale. In summary, these findings are as follows:

- Disturbance and successional regimes have been altered since European settlement in North Idaho.

- There has been a substantial reduction in the percent of the landscape composed of early seral tree species, such as western white pine, ponderosa pine, western larch, and whitebark pine. This is primarily the result of fire suppression, timber harvest, and the introduction of white pine blister rust.

- There has been a major shift in forest structure from old growth (seral species and riparian western red cedar) to medium/immature size-class stands. This is primarily the result of timber harvest, suppression of fire, and introduction of blister rust.

- Landscape patterns have been modified by timber harvest and the exclusion of fire. Current landscape patterns are more uniform. Old growth patches are smaller. Approximately the same percentage of the landscape is in openings but the openings are more numerous, smaller in size, and scattered across the watersheds.

In order to maintain healthy sustainable ecosystems it is imperative to use adapted species and adaptable forest structures. Findings within these broad-scale and subbasin assessments suggest three strategies, as follows:
- converting shade-tolerant, drought- and fire-intolerant species to shade-intolerant, drought- and fire-tolerant (seral) species through regeneration harvests;
- reducing fire risk through harvest of overstocked stands; and
- making use of natural tree mortality.

Major concentrations of natural disturbances (insects, pathogens, weather events, fire) will be used as opportunities for restoration. Treatments in response to natural disturbances will trend the ecosystem toward desirable conditions, and will not accelerate undesirable trends.

With the NZGA for the Priest Lake, Bonners Ferry, and Sandpoint Ranger Districts still in progress, several historic reference conditions and disturbance/successional influences are used in this chapter (referred to as IPNFs 2000). In addition, an intensive historical review of the Selkirk Mountains vegetation and fire history was completed as part of an effort to track historical changes in endangered woodland caribou habitat. Summary information from that effort is referenced as Allen 1999.

B. General Watershed Descriptions and Management Direction

Smith Creek

Nearly 27,000 acres in size, Smith Creek is a roaded drainage with a minimal amount of non-roaded area. The roadless portions are in the Selkirk Roadless Area (01125). The management focus, as identified in the IPNF's Forest Plan, is on grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products.

Long Canyon Creek

The Long Canyon Creek watershed, 21,000 acres in size, is a non-roaded drainage within Selkirk Roadless Area. No timber harvest has taken place on federal lands within Long Canyon. As outlined in the Forest Plan, the majority of the drainage is managed for semi-primitive recreation opportunities. The remaining portion is managed as proposed wilderness.

Parker Creek

The Parker Creek watershed, nearly 13,000 acres in size, is a non-roaded drainage within the Selkirk Roadless Area. There has been no timber harvest in this watershed. As outlined in the Forest Plan, the majority of the drainage is managed for semi-primitive recreation opportunities. The remaining portion is managed as proposed wilderness.

Fisher Creek

The Fisher Creek watershed is approximately 7,000 acres in size. This is a non-roaded drainage with a limited amount of past timber harvest. It is located within the Selkirk Roadless Area. The management focus, as identified in the IPNF's Forest Plan, is on grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products.

Trout Creek

The Trout Creek watershed, approximately 14,000 acres in size, contains a mixture of roaded and non-roaded areas. The roadless portions are in the Selkirk Roadless Area. The upper end (western most section) is within a proposed wilderness management area, as identified in the Forest Plan. The remainder of the drainage is managed as grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products.

Ball Creek

The Ball Creek watershed, approximately 17,000 acres in size, contains a mixture of roaded and non-roaded areas. The roadless portions are in the Selkirk Roadless Area. The extreme upper end of the drainage is within a proposed wilderness management area, as identified in the Forest Plan. The remainder of the drainage is managed as grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products.

Burton-Cascade Creeks

The Burton-Cascade Creeks watershed, approximately 7,500 acres in size, includes Burton, Clark, Lost, and Cascade Creeks. The majority of the land base within this watershed area is roaded, with only a minor portion within the Selkirk Roadless Area. The entire drainage is managed as grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products.

Myrtle Creek

The Myrtle Creek watershed covers over 23,500 acres, including both private and federal lands. Approximately three quarters of the land base in this watershed area is roaded, with the remaining portion located in the Selkirk Roadless Area. The bulk of the drainage is managed as grizzly bear and caribou habitat, with a secondary focus on the production of commercially valuable wood products, except in the upper end of the drainage, which is managed as proposed wilderness.

C. Disturbance and Successional Patterns

Various fire-related terms are used throughout this section. "Severity" refers to the amount of damage a fire actually causes and "return interval" refers to how often a particular type of fire occurs. The types of fires that occur in forested ecosystems are described below.

Non-lethal fires - fires that kill 10% or less of the dominant tree canopy. A much larger percentage of small understory trees, shrubs, and forbs may be burned back to the ground line. These are commonly low severity surface and understory fires, often (but not always) with short return intervals (a few decades).

Mixed severity fires - fires that kill more than 10%, but less than 90% of the dominant tree canopy. These fires are commonly patchy, irregular burns, producing a mosaic of different burn severities. Return intervals on mixed severity fires may be quite variable.

Lethal fires - fires that kill 90% or more of the dominant tree canopy. These are often called "stand replacing" fires and they often burn with high severity. They are commonly (but not always) crown fires. In general, lethal fires have long return intervals (140-250+ years apart), but affect large areas when they do occur. Local examples of these types of fires would be the Sundance and Trapper Peak fires of 1967 that burned over 80,000 acres in a relatively short time period.

1) Prior to European Settlement

Prior to European settlement of Boundary County, numerous natural and human causes (the Kootenai Indians) influenced the vegetative structure and composition of the forests. These would have included fire, wind, insects, disease, and other similar events.

Of these, fire was the primary disturbance factor throughout the assessment area (Table 3-1). Fire has burned in every ecosystem on virtually every square foot of northern Idaho's coniferous forests (Spurr and Barnes 1980). The intensities and intervals of individual fires have varied and will continue to vary, based on weather, stand conditions, fuel moistures, aspect, habitat types, the amount, type and arrangement of available fuels, and similar variables (Davis 1959).

Table 3-1 Summary of Fire History

Area (watershed)	Summary of Fire History (approximate years)
Smith Creek	Approximately 90% of upper Smith Creek burned in 1750, 1800, 1830, and 1840. About 75% of lower portion burned in 1895 (Allen, 1999)
Long Canyon Creek	Many fires burned thousands of acres throughout the 1700s and 1800s. The upper 1/3 or more burned in 2 major fires around 1780 and 1930.
Parker Creek	Many fires burned thousands of acres throughout the 1700s and 1800s. The upper 1/3 or more burned in 2 major fires around 1780 and 1930.
Fisher Creek	Several large fires have occurred from the mid-1700s through early 1900s, burning thousands of acres.
Trout Creek	Most of the upper 40% of the watershed burned in 3 major fires around 1740, 1770, and 1930; burning thousands of acres.
Ball Creek	About 80% of the watershed burned in 3 major fires in 1780, 1800, and 1830; burning nearly 14,000 acres.
Burton-Cascade	About 60% of these watersheds burned around 1800 and 1890; another 10 to 15% burned around 1860 and 1870.
Myrtle Creek	This drainage has had a dramatic fire history since 1740. Large fires occurred around 1750, 1800, 1830, 1860, 1890, and 1926; burning an average of 1300 acres each decade.

Note: Fires that occurred up to 1930 were included in the above discussion given that most of the areas were fairly inaccessible from roads. Roaded access, among other modern technologies, played a major role in our ability to successfully suppress fires after this period.

Historically, one-third of the landscape in the Kootenai subbasin would have experienced a stand-replacement fire over a 70-year period, and the majority of the landscape would have experienced a mixed-severity fire (Art Zack 1995).

Most of these fires would have been lightning caused, especially at the upper elevations; however, the Kootenai tribe was known for using fire for various reasons. They used fire to improve hunting through increased browse, clear campsites, encourage berry production and medicinal plants, for agricultural use, to maintain their trail systems, and various other purposes (White 1995). They would broadcast burn areas that had grown too dense and threatened to reduce the supply of game, berries and roots. These fires resulted in frequent underburns or in periodic total stand destruction (Chatters and Leavell, 1996).

2) Since European Settlement

Since European settlement in Boundary County, the forested landscape has undergone substantial change from numerous causes. However, there are three primary disturbance

factors throughout the entire project that have contributed to changes in the vegetation. They include fire suppression, past logging practices, and the white pine blister rust fungus (Zack 1995, IPNFs 2000). For the whitebark pine stands alone, the primary disturbance factors include fire suppression, blister rust, and mountain pine beetle epidemics (Reynolds 1990, Kegley et al 2001, Tomback et al 2001). Past timber harvest has not been a factor since logging has not occurred within the proposed whitebark pine treatment areas.

2-a. White Pine Blister Rust and Mountain Pine Beetle

A non-native pathogen, white pine blister rust fungus causes branch and stem cankers that will eventually cause top kill or death of most infected trees. It was first detected in western North America in 1921 in Vancouver, British Columbia (Boyce 1961), and in northern Idaho in 1927, near Priest River (Forest Land Use Plan, 1975). It attacks all native and introduced five-needled pine trees, including local western white pine and whitebark pine (Hagle et al 1987). This fungus is responsible for the mortality of tens of thousands of white pine and whitebark pine trees, ranging from seedlings to old growth veterans, throughout the assessment area.

Figure 3-2. View of a whitebark pine stand in the Selkirk Mountains. The heavy patch of mortality was caused primarily by mountain pine beetles and to a lesser extent by white pine blister rust.

Annual aerial surveys show that significant outbreaks of mountain pine beetle are occurring in the Selkirk Mountains, throughout the assessment area (Figure 3-2), the Bonners Ferry Ranger District (Figure 3-3), and within many of the whitebark pine stands on the Idaho Panhandle National Forests.

According to these surveys, a minor outbreak occurred in 1995 followed by a very large one in 1999, which was not showing any signs of slowing down in 2000.

The 1999 survey prompted a more intense ground survey in the fall of 2000 on Russell Ridge, Russell Mountain, and Burton Ridge.

Cumulative whitebark pine mortality from current and past outbreaks ranges from 36 to 74%, with 23 to 44% occurring since 1999.

At Pyramid Pass, a 1995 ground survey showed that mountain pine beetles had killed 22% of the whitebark pines in the area. By 1999, a follow-up survey showed that only 18% of the white-bark pines were still alive and that beetles had killed 74% of them (Kegley et al 2001).

Observations on the Idaho Panhandle National Forest by Art Zack (Zack 1995) showed as much as 95% mortality of whitebark pine in stands that previously contained a major component of this species.

Figure 3-3. Aerial survey showing areas of Whitebark Pine Mortality on the Bonners Ferry Ranger District (Kegley 2001)

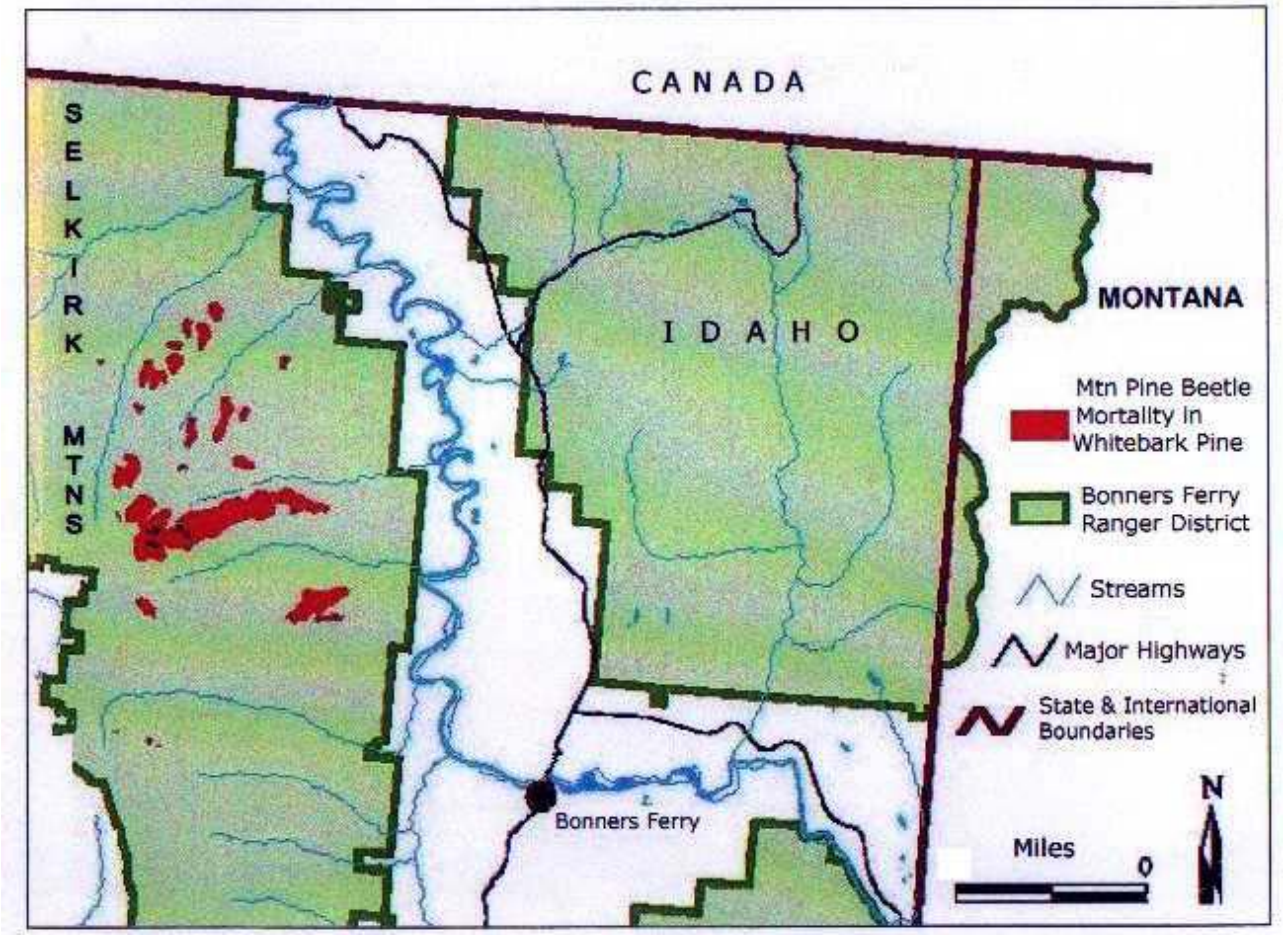


Figure 3-4 on the next page, shows the number of trees killed and the number of acres infested with mountain pine beetle in the project area from 1992 through 2001. The increase in number of trees and acres impacted is quite obvious. The map in Figure 3-3 displays the location of the beetle-killed pines in 2000. This information was derived from aerial surveys.

Figure 3-5, also on the next pages, provides summary insect and disease information compiled from Kegley et al (2000) and the 2002 Forest Plan Monitoring Report.

Figure 3-4. Aerial survey estimates of mountain pine beetle infested acres and whitebark pine trees killed (Kegley 2001, Zack 2002)

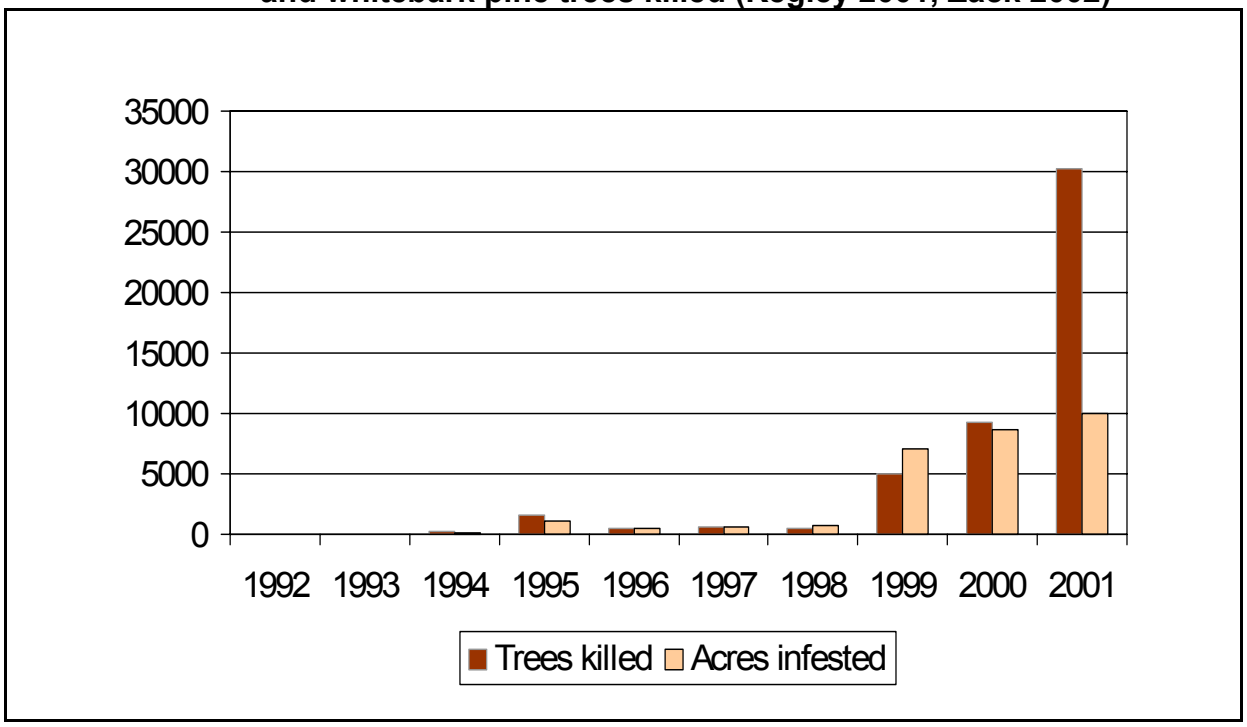
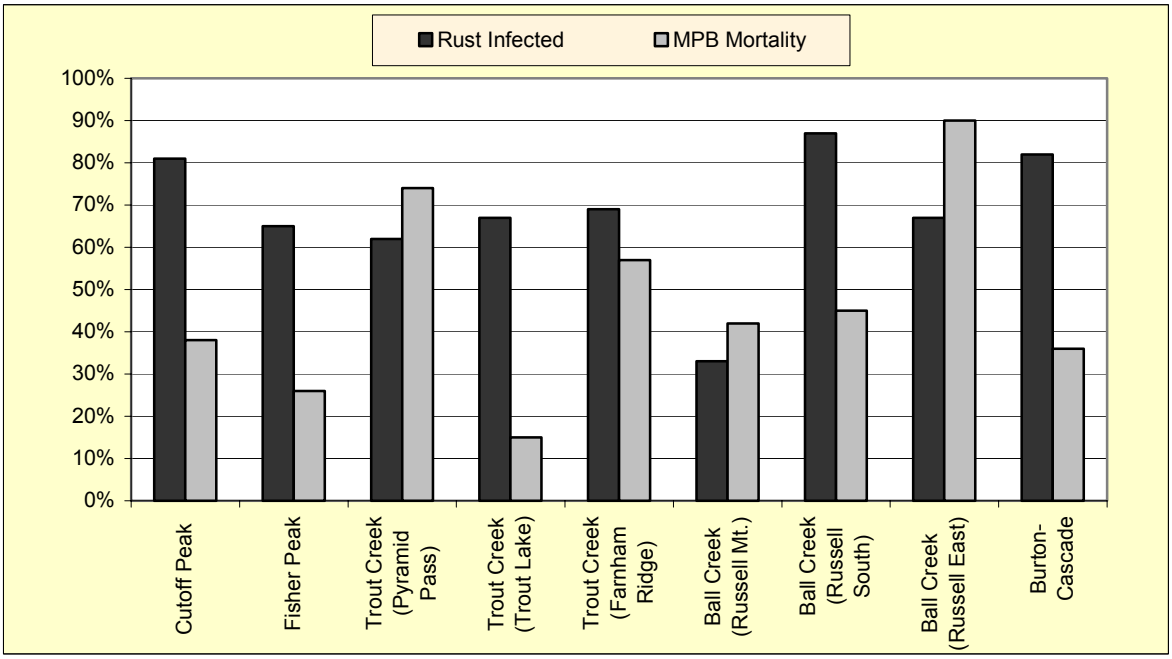


Figure 3-5. Blister Rust and MPB Occurrences in the Project Area



Note: Data from Cutoff Peak, Fisher Peak, Trout Creek (Trout lake), Trout Creek (Farnham Ridge), and Ball Creek (Russell East) were taken from the 2002 Forest Plan Monitoring Report. Data from Trout Creek (Pyramid Pass), Ball Creek (Russell Mt.), Ball Creek (Russell South), and Burton-Cascade were taken from Kegley et al (2000).

2-b. Wildfire and Fire Suppression

In the first several decades after Europeans settled in northern Idaho no efforts were made to eliminate wildfires. From the late 1800s through early 1900s, several large fires within the assessment area burned tens of thousands of acres. The most prominent years included 1890, 1895, 1921, 1925, 1928, 1929, 1930, and 1931 (Allen 1999).

Firefighting effectiveness increased in the 1940s and the 1950s with additional funding for fire suppression, which allowed for increased use of trained fire-fighting crews, smokejumpers, airplanes, helicopters, and bulldozers (Clark and Sampson, 1995). District fire records dating back to 1941 list all fires on the district by name, date, size, location, and other factors. Since 1941 there have been 259 fire starts in the Whitebark Pine assessment area, with only eleven that grew larger than ten acres in size and 19 that were between one and ten acres in size; 229 were less than 1 acre in size.

Table 3-2 Fires Larger than 10 Acres in Size Within Whitebark Pine Assessment Area - 1941 to Present

FIRE NAME	Year	Size (Acres)
Fisher Creek	1958	171
Russell Mountain	1962	19
Trout Creek	1963	31
Cedar Hill	1967	124
Ball Creek	1970	2670
Russell Mountain	1974	82
Ball Creek	1986	35
Caribou Lakes	1988	134
Fisher Peak	1994	337
South Long Canyon	2001	60
Myrtle Creek	2003	3450
Total Acres burned since 1941		7113

On September 2, 2003, a human-caused fire started in the lower portion of the Myrtle Creek drainage and burned approximately 3,600 acres before it was contained about 2-1/2 weeks later. The fire burned in the lower 15 percent of the Myrtle Creek watershed immediately above the mouth (about 3,450 acres) and within a small portion of the Cascade Creek drainage (roughly 150 acres). The majority of the area affected in the drainage had burned in 1926. The Myrtle Creek Fire burned across the intake diversion structure for the City of Bonners Ferry's municipal water system.

Roughly, 7400 acres throughout the entire assessment area have burned in wildfires of all sizes in the last 63 years, averaging about 120 acres per year.

Potential cumulative effects of the fire are limited to Alternative 2; Alternatives 3 and 4 do not propose any treatment within the Myrtle Creek watershed. See Chapter 4 for additional discussions of the Myrtle Creek Fire.

Altering or removing the role of fire will produce significant changes in the ecosystem. Fire suppression has almost eliminated low and mixed severity fires as natural disturbance agents, and relegated stand-replacing fires to infrequent events occurring during extreme weather conditions (IPNFs 2000). Under current wildfire suppression policies, the fire return interval for whitebark pine areas has been estimated at about 3000 years. This is ten times the historic average (Tomback et al 2001). The whitebark pine communities require periodic fire for stand renewal (Tomback et al 2001).

2-c. Timber Harvest

Timber harvest has occurred throughout the assessment area; however, none of the previous harvesting extended into the whitebark pine dominated stands that are identified for treatment in this project. The first big logging efforts began in the early 1950s. Many access roads were constructed during that time period into remote sections of the assessment area, but not into the whitebark pine stands.

Logging has continued on both National Forest and private lands, with the exception of federal lands within the Parker and Long Canyon Creek drainages. The type of harvest treatments has included regeneration harvesting (clearcut, seed tree and shelterwood cuts) and partial cutting (salvage, thinning, etc).

D. Vegetation Assessment: Current vs. Historic Conditions

The Whitebark Pine Project Area encompasses over 135,000 acres in the Selkirk Mountains on the Bonners Ferry Ranger District. Changes in forest composition and structure were evaluated by comparing historic information from the North Zone Geographic Assessment (draft 8/2000) and current information from the Idaho Panhandle National Forests Timber Stand Management Record System (TSMRS) Database. The raw data is contained within the project file. The information that follows provides a discussion of the existing conditions in the whitebark pine zone within the project area, as compared to the conditions that existed historically in the whitebark pine zone across the Kootenai River sub-basin.

1) Habitat Type Groups

Forest vegetation in northern Idaho is shaped by numerous physical and environmental factors that are separated into habitat types. Many of the habitat types are similar in their characteristics and are grouped into habitat type groups. Four major habitat type groups, based mostly on their similarities in forest character, climate and moisture regimes, and natural disturbance processes (primarily fire), occur throughout the assessment area and are described below. This project proposes treatments only within the higher elevation cold-dry forests where the whitebark pine stands are located.

Cold-Dry forests - These forests are generally located at higher elevations near timberline and are characterized by harsher, more restrictive growing environments. The forest canopy is often open with trees growing in clusters. A mixture of whitebark pine, lodgepole pine, Englemann spruce, mountain hemlock, and subalpine fir dominates these stands.

Whitebark pine dominance increases with increases in elevation and site severity (Smith and Fischer 1997). Historically, stand-replacing fires occurred at average intervals ranging from 50 to 300 years (Reynolds 1990) with mean fire return intervals of 150 to175 years (IPNFs 2000). Mixed-severity fires were typical (Smith and Fischer 1997). Where fire has been excluded successfully over large areas, more area is in mature stands than prior to European settlement. Historically, low-severity fires served to break up fuel concentrations and increase forest diversity across the landscape in these forest types. Because of these changes, and the fact that large stand-replacing fires occur typically only during extreme weather conditions (IPNFs 2000), modern-day stand-replacing fires may be more likely to burn severely over large areas than stand-replacing fires in pre-European settlement times.

Given these are the forest types that provide the majority of the capable whitebark pine habitat, they will be referred to as the whitebark pine zone in the discussions that follow.

Cool-Moist forests - These forests are dominated primarily by subalpine fir and Engelmann spruce and characterized by cool and moist conditions. The cool-moist forests transition into the cold-dry forests where the highest percentages of whitebark pine are found. Whitebark pine does occur in the cool-moist forest types, but is typically considered a minor component. In pre-European settlement times, the average interval between stand-replacing fires in these stands was about 170 years (Smith and Fischer 1997). Since the majorities of the stands within the area are 170 years old or less, which is within the historic stand-replacing fire return interval, fire exclusion has not measurably altered the structure and composition of these stands. In essence, these stands now have very little diversity. Historically, low and mixed-severity fires created variety in structure and fuels across these landscapes; suppression of dozens of fire starts within the past several decades has decreased the stand diversity.

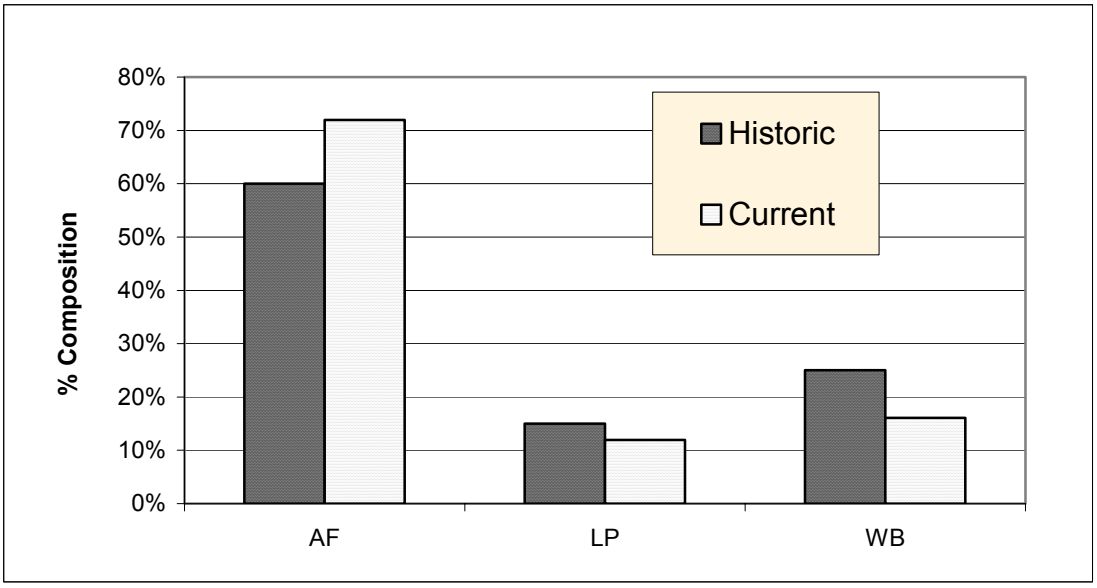
Moist forests - These forests are dominated by a mixture of conifer species, including western redcedar, western hemlock, Douglas-fir, grand fir, western white pine, western larch, and lodgepole pine. These are the most common forest types on mid-elevation sites in the mountains of the northern Idaho panhandle. Prior to the introduction of blister rust, when white pine was a dominant species, this was known as the "white pine type." Currently, less than 1% of the project area is composed of stands where white pine is the dominant overstory tree (IPNF Timber Stand Management Record System Database). Whitebark pine does not occur in these forest types.

Warm-Dry forests - These forest types consist primarily of Douglas fir, ponderosa pine, western larch, and grand fir. Historically these sites maintained grassy and open park-like stands of large, old ponderosa pine (Smith and Fischer 1987) with larch mixed in on the moister end of these sites. Prior to European settlement light underburns that occurred every 25 years or less on the average (O'Laughlin et al 1993) were common and maintained these open stand structures. Mixed severity fires and stand replacing fires were relatively infrequent in pre-European times in these dry forest types. Whitebark pine does not occur in these forest types.

2) Forest Composition

The whitebark pine zone, which represent about 8% of all forest types in the Kootenai River sub-basin, are typically composed of four conifer species, subalpine fir, Engelmann spruce, lodgepole pine and whitebark pine. Depending on a number of site variables, the percentage of each species varies from stand to stand. The Selkirk Mountains, including the project area, contain some of the best whitebark habitat in the sub-basin. The entire Kootenai River sub-basin contains an estimated 32,500 acres capable of supporting substantial populations of whitebark pine, while nearly 60%, or about 19,500 acres, of the ecosystems in the sub-basin capable of supporting substantial populations of whitebark pine are contained in the project area. Figure 3-6 compares the estimated historic forest composition in the whitebark pine zone across the Kootenai River sub-basin to the current composition of these same forest types in the project area. As described earlier, whitebark pine has suffered major declines resulting from the introduction of the blister rust fungus, wildfire suppression, and the mountain pine beetle. Consequently, as shown in Figure 3-5, the composition of subalpine fir in these ecosystems has increased, while the composition of whitebark pine has decreased. Logging has not impacted whitebark pine.

Figure 3-6. Historic vs. Current Forest Composition in the Whitebark Pine Zone



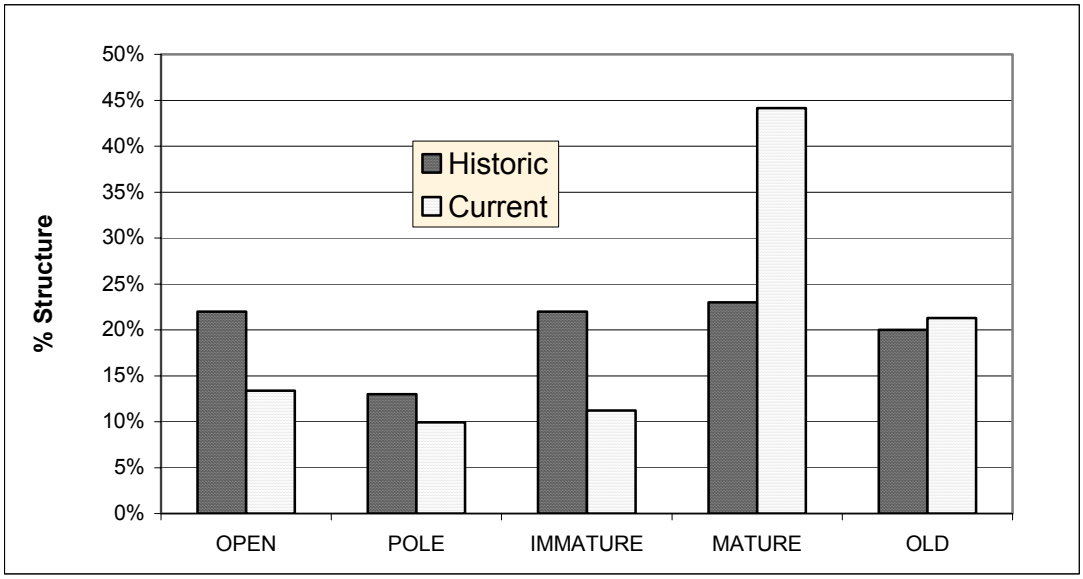
LP = lodgepole pine, SAF = combination of subalpine fir and Engelmann spruce, WBP = white bark pine.

3) Forest Structure

As indicated in Figure 3-6, there have been some changes in forest structure over the last century. The relatively younger forest structures (open, pole, and immature classes) are lower than the estimated historic estimates that occurred across the Kootenai River sub-basin in the whitebark pine zone. The combined totals of these three classes is currently about half of the estimated historic levels. Conversely, there is now a abundance of mature and old forest

structures (65%) in the whitebark pine zone. These current conditions reflect our 20th century fire suppression policies. Almost certainly, under historic fire regimes there would have been some sort of large-scale fire in the whitebark pine zone that would have changed the mix of forest structures. Additionally, the mountain pine beetle attacks in the whitebark pine zone since the mid-1990's are another indicator of an ecosystem that is dominated older forest structures.

Figure 3-7. Historic vs. Current Forest Structure in the Whitebark Pine Zone



3.2 Recreation Opportunities, Proposed Wilderness Areas, and associated Visual Quality

Introduction

The Selkirk Mountains have a long history of recreation use. Lands within the analysis area are distinctive in that they offer exceptionally high scenic quality and a variety of settings within an hour of a full service community and two major federal highways. The area accommodates a wide diversity of activities ranging from car camping, huckleberry picking, hunting and fishing, to ski mountaineering, backpacking, and rock climbing.

A. General Background Information

Recreational activities take place in all seasons and in all sections of the analysis area. Recreation use has increased significantly in the last 20 years. The Selkirk Crest has been touted as a special "undiscovered" wildland area. Locally and nationally distributed guidebooks and newspaper coverage have promoted the area. Area guidebooks have been written for back packing, fishing, day hiking, photography, mountain bike riding and more. Trails in the Trout

Creek area are so popular that use restrictions have been enforced for the past six years to protect and maintain fragile alpine integrity.

An additional fast growth industry that utilizes the Selkirk backcountry area is the alternative education schools. These schools commonly model Outward Bound or the National Outdoor Leadership School. Outdoor activities to gain self-reliance and hands-on nature study are paramount aspects of their educational programs. Several of these schools are located within Boundary County. Existing special use permits outline allowable activities within the analysis area.

The Selkirk Crest Special Management Area, a portion of the Selkirk Crest that is located on both federal and state land, is located within the analysis area. Management of this area takes place through a Memorandum of Understanding between the Idaho Department of Lands and the Forest Service. In addition, the Selkirk Crest and contiguous roadless lands (Long Canyon Creek, Parker Creek, and Fisher Creek watersheds) have been supported for Wilderness designation for the last 20 years or more. Area boundaries included for designation have varied with each proposal. Nonetheless, the Wilderness designation debate has focused an unusual amount of attention on the Selkirks.

Long Canyon Creek is a candidate for Wild and Scenic River designation under the Wild and Scenic Rivers Act of 1968. Certain selected rivers that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values would be preserved in free-flowing condition and protected for the benefit and enjoyment of present and future generations.

Landform characteristics throughout the project area are distinctive and provide outstanding scenic quality. The area extends from the Kootenai Valley floor to the rugged Selkirk Crest. More than 25 lakes and ponds provide recreational points of interest within the analysis area. Old growth forests, fire scarred hillsides, scoured granite faces, and alpine ridges comprise the area. Some of the highest peaks on the District are located along Fisher Ridge. The valley bottoms appear to be comprised of fairly continuous vegetation, but the side slopes contain a wide variety of colors and textures caused primarily by rock outcrops, stream courses, and stands of various age and size classes from past wildfires. Most of the project area has the highest degree of scenic integrity. (Scenic integrity refers to a sense of wholeness, intactness or being complete.) The Selkirks and Long Canyon are considered special and aesthetically important to a widely varied constituency.

Historic cabins and/or lookouts, all associated with old fire lookouts, remain on Cooks, Burton, Russell, Cutoff, West Fork, and Shorty Peaks. They are all still intact, but only Shorty Peak is usable. It is in very good condition and is used as part of the District's lookout rental program. Remnants of old fire towers lie on Fisher, Parker, Red Top, and Myrtle Peaks. The West Fork cabin, a historic Forest Service cabin, recently burned down and was reconstructed. It is open to public use. There are no developed campgrounds within the analysis area, but there is ample and full range dispersed camping opportunities. Approximately 125 miles of maintained trail provide backcountry access; another 18 miles of unimproved trail traverse project area lands.

1) Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a system for defining the types of outdoor recreation opportunities the public might desire as well as identifying the portion of the Spectrum a given area might be able to provide. It is used for planning and managing the recreation resource and recognizes recreation activity, setting, and experience opportunities. The ROS classes within the analysis area are: Primitive, Semi-Primitive Motorized, Semi-Primitive Non-motorized, Roaded-Natural, Roaded-Modified, Roaded Modified Non-motorized and Rural. The characteristics of the landscape change seasonally, with the ROS classes generally reflecting more Primitive and Semi-primitive attributes during the winter. Out of approximately 135,000 acres in the analysis area, the acres of each ROS class are included in the following table, Table 3-3.

Table 3-3 Recreation Opportunity Spectrum

Recreation Opportunity Spectrum (ROS)		Summer Season				Winter Season			
		Acres		Percent of Area		Acres		Percent of Area	
Primitive	Class 1	47,704	46,173	35	97	42,597	42,597	31	100
	Class 2		379		1		0		0
	Class 3		1,152		2		0		0
Semi-Primitive Motorized		0		0		63,562		47	
Semi-Primitive Non-Motorized		38,248		28		15,823		12	
Roaded-Natural		0		0		12,037		9	
Roaded-Modified		27,464		20		0		0	
Roaded-Modified Non-Motorized		23,454		17		0		0	
Rural		1,152		Less than 1%		1,326		1%	

It is significant that within the analysis area, more than 60% of the lands during the summer, and more than 90% of the lands during the winter, are classified as primitive or semi-primitive non-motorized. In general, primitive lands are characterized by unmodified environments while semi-primitive lands are predominantly natural or natural appearing. In primitive lands, evidence of humans would be unnoticed by an observer wandering through the area;in semi-primitive lands, modifications would be noticed but would not draw the attention of an observer wandering through the area. Primitive lands are at least three miles from sights and sounds of human activity. Semi-primitive lands are at least a half of a mile from sights and sounds of human activity from all roads, railroads, or trails used for motorized use. Interaction between users in both primitive and semi-primitive land classifications is low. Typical and appropriate recreational activities in both are generally unconfined in nature, and include things such as viewing scenery, hiking, horse riding, tent camping, hunting, mountain climbing, cross country skiing, and snowmobiling.

Primitive lands in this analysis area are exceptional in that they are characterized by near-intact or pristine ecological conditions. They offer exceptional opportunity for isolation and solitude. Users

must use a maximum degree of outdoor skills, often in an environment that offers a high degree of challenge, self-reliance and risk.

In Primitive Class 3 areas, typical use occurs along trail corridors and around lakes accessed by trails. Use along these trails has been monitored for the past 15 years. Guidelines were set for use levels and patterns under the Trout Creek Area Recreation project in a decision dated in May of 1995. Use levels were set primarily for protection of the grizzly bear and to prevent degradation of sensitive high alpine environments.

In a typical year, trail maintenance projects for all trail mileage in Long Canyon, the Trout Creek lakes area, and along Parker Ridge, can be accomplished in 5 to 6 days. Seven to ten day trail construction projects have occurred intermittently over the last 20 years. The greatest sustained impact in primitive lands was the reconstruction of Trail #7, which runs from Parker Ridge to Long Canyon. This project required two to three, 8 to 10 day work trips per year for three years, in 1985, 1986, and 1987. Both power and hand tools were used. On other projects, helicopters have flown trail construction materials into Long Canyon, using no more than three days of helicopter time per project. All camps were primitive and low impact in nature, set in existing campsites. With the exception of Trail #7, all of the trails have remained in the same location they occupied in the early 1960's or before. Established use patterns have varied only slightly in Long Canyon. Use has dropped significantly on Russell and Fisher Ridges and in Parker Canyon, due primarily to the change in fire detection from lookouts to air patrol. Use levels and patterns have changed in the Trout Creek lakes area but are currently moderated by the Trout Creek Project.

In Primitive Class 2 areas, infrequent use of less than 10 people per normal use season, occurs on several short, un-trailed ridges. Use is recreational and transitory in nature.

In Primitive Class 1 areas, the majority of the primitive areas are almost completely unaffected by human actions. For the entire Parker Creek watershed, much of upper Long Canyon Creek, and most of the Selkirk Crest, including Cutoff Peak, Lake Mountain, Smith Peak, Lions Head, and Abandon Mountain, it would be unusual that more than two or three people would visit the area in a three year period. There are no old trails, signs, or cairns marking travel routes. The most noticeable man-caused changes to the landscape are three or four generally unimproved helispots along Smith Ridge, along with rare and isolated stumps due to past fire suppression activities. In any case, alterations are so slight that only the most observant visitors would notice them. The exception to this is the Fisher Peak Fire in 1994. From Fisher Peak, facing northeast, the straight-line effect of constructed fireline is still evident. No other wildfire in the primitive area has had suppression activities as dramatic as those used below Fisher Peak.

This primitive characteristic defines all of the MA11 and most of the MA10 lands in the project area. The MA10 designated lands in Parker and Long Canyon are actually more ecologically intact than some of the higher use MA11 lands. The MA10 lands contiguous to the Selkirk Crest have been managed with the same high sensitivity as the MA11 lands. These areas are specifically designated in the Forest Plan as having the highest visual sensitivity level with dispersed recreation being the primary management goal. The MA11 and MA10 lands in the Selkirk Mountains have been managed as a logical land unit, providing a very unique "sense of place."

2) Scenery Management System

The Handbook for Scenery Management, dated December 1995, supersedes the Visual Management System used prior to 1995. Landscape aesthetics objectives area discussed in terms of the scenic integrity criteria outlined within the Scenery Management System, with reference to the Visual Management Objectives outlined in the Forest Plan.

The Scenery Management System merges landscape characteristics with constituents' feelings about the scenic aesthetics of those lands. Qualities such as landscape uniqueness, scenic integrity, landscape visibility, and public concern for those lands are identified and rated to indicate the relative scenic importance of any area. In general, all lands within the analysis area are classified as 'distinctive" lands. The rugged landforms, diverse vegetation, water characteristics of lakes, ponds and streams, and the old lookout towers and cabins, combine to provide outstanding scenic quality. Scenic integrity varies widely based upon both the specific vantage point and the direction of viewing. Lands within the project area have exceptional attention and attachment of both local residents and a much broader regional constituency.

The following table compares the rating systems used by the Scenery Management System and the Forest Plan Visual Quality Objectives.

Table 3-4 Scenery Management System and Visual Quality Objectives Comparison

Scenery Management System (SMS)		**Visual Quality Objectives (VQO's)**
Rating	Description	Rating and Description
Very High	Unaltered	Preservation
High	Appears Unaltered	Retention
Moderate	Slightly Altered	Partial Retention
Low	Moderately Altered	Modification
Very Low	Heavily Altered	Maximum Modification
Unacceptably Low	Unacceptably Altered *	

*** This level should only be used to inventory existing scenic integrity.**

Forest Plan Management Areas MA11, MA10, MA9, MA7, and MA2 cover 97 percent of the analysis area. The remaining 3 percent is covered by MAs 1, 3, 4, 14 and 16. (See Chapter 1 MA descriptions and Figure 1-2 Management Area map for more information.)

The MA11 Visual Quality Objectives are the very highest, or preservation. Preservation guidelines denote a "Very High" or "Unaltered" scenic integrity level within the Scenery Management System, which allows for ecological changes only.

The MA10 lands in this analysis area are specifically designated in the Forest Plan as having the highest sensitivity level.

The MA9, MA7, and MA2 lands typically have a wide range of Visual Quality Objectives. Within this analysis area, these MAs are peripheral to MA11 lands and have been generally

treated with a higher sensitivity level than lands with the same designation in other parts of the forest.

It is important to note, that visually, whitebark pine is a fundamental component of the wildlands in the Selkirks. There is strong aesthetic association with whitebark pine. Whitebark pine is one of the visual cues that signify an untamed sense of place.

3) Trout Creek Project

The recreational experience for lands in the analysis area, which lay north and west of Russell ridge have been managed under guidelines developed in the Trout Creek project (decision dated 5/4/95). The purpose of the Trout Creek Project was to:

1. Provide a high quality recreation experience consistent with the primitive and semi-primitive nature of the area.
2. Correct existing resource damage and prevent further degradation of the area.
3. Provide recreation opportunities consistent with the recovery of the grizzly bear and woodland caribou. (Trout Creek EA, page 1)

Other benefits of the Trout Creek Project Environmental Assessment were as follows:

1. Documentation of the recreation/grizzly bear environment.
2. Development of recreation guidelines consistent with grizzly bear and caribou recovery guidelines.
3. Selection of a monitoring program that would display unacceptable changes in the recreation/bear environment, analyze possible management actions, and evaluate the success of those practices implemented.

Site-specific conditions, recreational activities, travel patterns, seasons of use, days and areas of highest use, group size, length of stay, and total number of recreation visitor days for the area were determined. That information was compared to grizzly bear guidelines and low impact direction. (A Recreation Visitor Day (RVD) is a 12-hour increment. For example, one person camping at an area two days and one night, equates to three RVDs.)

The Trout Creek EA, Decision Notice and resulting monitoring program (project file documents), led to several restoration projects as well as area closures. The first closure, Order Number D7-97-003, signed 4/23/97, restricted the amount of trailhead parking, the group size, and duration of stay. Overnight camping with stock was not allowed at Pyramid, Ball, or Trout Lakes. This closure order was updated and expanded slightly, on 6/25/02, through Order Number D7-02-001. In addition to the original lakes, this order closed camping with stock at Big Fisher Lake, Long Mountain Lake, and Parker Lake. The parking, camping duration, and group size limitations remain the same as in the original closure order.

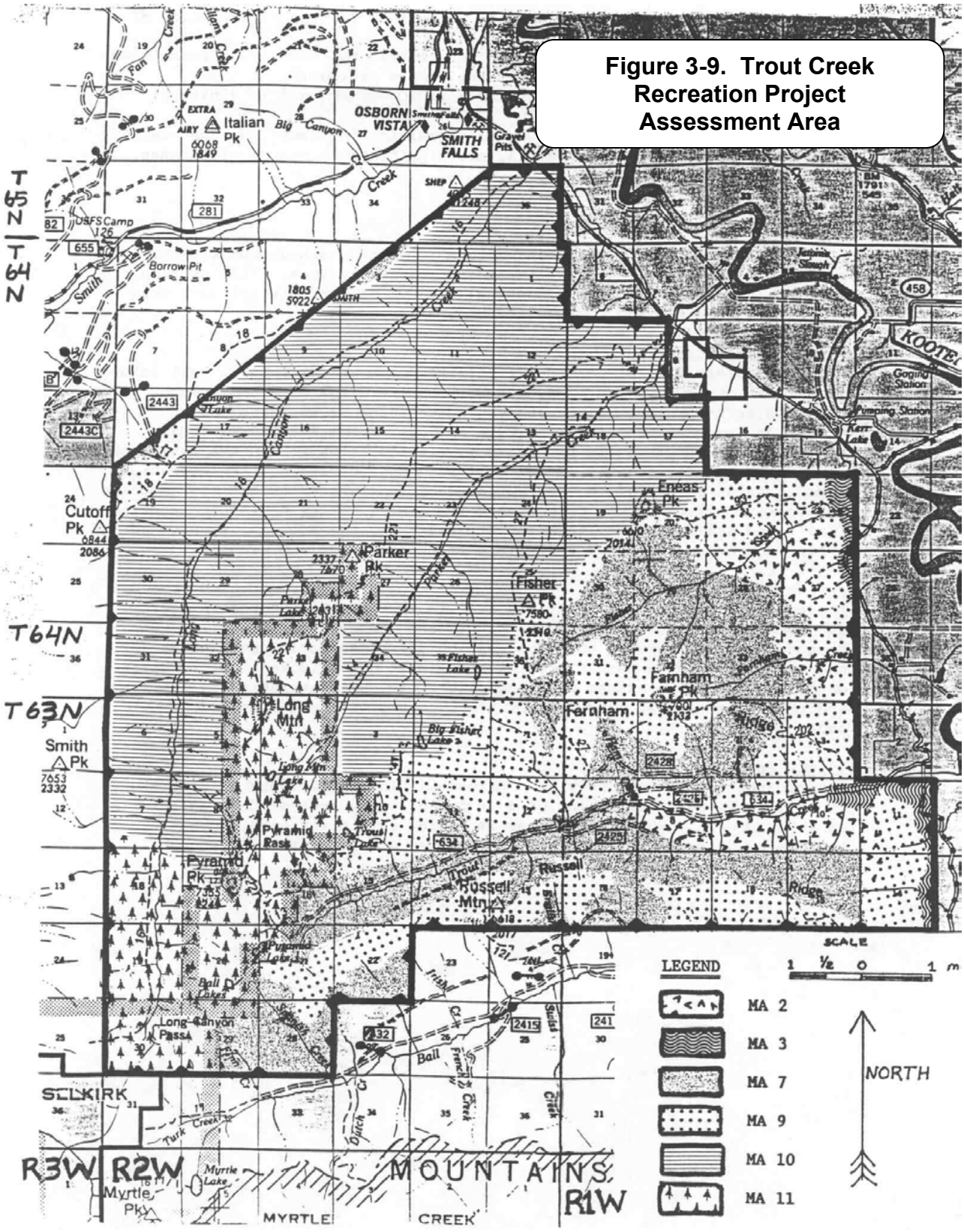


Figure 3-9. Trout Creek Recreation Project Assessment Area

4) Forest Plan - Management Area 11

Nearly 19,000 acres of the analysis area are identified as Management Area 11 in the Forest Plan. The primary management goal for MA11 lands is protection of wilderness characteristics pending Congressional designation. Other MA11 goals include: 1) providing opportunities for primitive and semi-primitive recreation, and 2) public use, enjoyment, and understanding of wilderness as a resource. Standards within those goals that relate to this project include: Visual Management objectives, standards concerning insects and disease, and fire protection and ignition guidelines.

In terms of insects and disease, MA11 guidelines indicate that conditions should be monitored and if they pose a significant threat to lands outside wilderness areas, then control measures may be taken. Biological control will be given a priority.

In MA11 classified lands, fire should be allowed to play a natural role. Appropriate suppression should be used to protect life, prevent loss of property, and to prevent fire from spreading to adjacent lands. Areas where prescribed fire might provide a cost effective and beneficial way to meet area management objectives should be identified. In addition, standards allow the use of prescribed fire in order to promote key wildlife winter range areas as long as other resource values are adequately protected.

Whitebark pine is not specifically mentioned in MA11 goals and standards.

5) Wilderness

Since the primary management goal of MA11 lands is to protect wilderness characteristics pending designation, a discussion of wilderness values and management trends is important. Wilderness is one of the extremes on the environmental spectrum (ROS). As defined by the Wilderness Act of 1964 (Sec 2c), “A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain…[and]…which is protected and managed so as to preserve its natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable...” The purpose of the Act is to “ assure that an increasing population accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States... leaving no lands designated for preservation and protection in their natural condition…” (Wilderness Act, sec 2a).

The environmental modification that separates Wilderness from other land uses is that there is no compromise in solitude or naturalness. To preserve those characteristics, it requires that demands inconsistent with the areas wilderness character be met elsewhere. Appropriate recreational use in wilderness areas is primitive in nature, including backpacking, horseback riding, hunting, fishing, cross country skiing, and snowshoeing. Users expect a high degree of risk and solitude. On-site regulation is low with most regulation occurring outside the wilderness boundaries.

Fire management in Wilderness areas has changed in the last 30 years. Understanding of ecological impacts of fire suppression has become increasingly more sophisticated. In the 1970s, the Forest Service allowed lightning-caused fires to play a more natural role when approved by the Chief of the Forest Service. This was a change from the previous total suppression policy. By 1985, under policy revision the Forest Service allowed fire under very specific conditions. Those conditions were to: "(1) permit lightning-caused fires to play, as nearly as possible, their natural ecological role within wilderness; and to (2) reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness" (USDA 1985).

Fire danger, as a result of fire suppression, was the driving criteria. In fact, concern for what constitutes "natural" fire caused the 1983 Wilderness Fire Symposium to create a working definition of "natural." The definition they created says that a natural fire for any given ecosystem 1) burns within the range (and frequency distribution) of fire intensities, frequencies, seasons, and sizes found in that ecosystem before arrival of western technological man, and 2) yields the range of effects and results found in that ecosystem before the arrival of technological man (Kilgore 1985).

In subsequent years, many National Forests developed fire plans that outlined specific objectives and criteria for allowing fires to burn within Wilderness areas. The guidelines required the National Forests to consider the ignition source, threat to life or property, proximity to wilderness boundary, regional fire preparedness level, drought indexes, and air quality in decisions to let wilderness fires burn or to suppress (Tomascak, 1991; Yung)

Surveys have shown that Wilderness users have generally become more supportive of naturally ignited fires within Wilderness, but support drops with more active intervention (McCool and Stankey, 1986). Active intervention would include such things as the use of mechanized equipment, planting, and manager-ignited fires.

Regardless of policy or sentiment, the majority of natural ignitions in Wilderness continue to be suppressed. The issue of manager-ignited fires within Wilderness continues to be surrounded by legal ambiguity and considerably different interpretations of the Wilderness Act. Some of the issues concerning manager-ignited fires include:

Historic fire intervals - In a long-fire-return interval ecosystem, has fire suppression changed the natural dynamics greatly?

- Consideration of non-wilderness values and resources - Some groups or individuals question the Forest Service's ability to deal with extreme fire seasons, property and resources outside of wilderness boundaries, which could be affected, etc.
- The effect of historic anthropogenic fire - The creation of unusual fire frequencies, creation of microclimates, can lightening-caused fire alone restore natural prehistoric state, or will it fashion an ecosystem that has never existed before?
- The ability of manager ignited fires to adequately imitate those found in nature. - Can fire managers provide close approximations of natural fire and effect, copy natural fire frequency, intensity, and season, while protecting human life and property?
- Philosophical debates as to whether manager-ignited fire or fire suppression, in Wilderness areas, is the greater "trammeling." - Is it possible to erase past trammeling by aggressive intervention?

Issues that extend beyond fire considerations include:

- Whether restoration work within Wilderness areas is appropriate or just another form of manipulation.
- Whether a one-time entry is more acceptable than multiple entries.
- Whether restoration work of one kind opens the door for other future restoration or experimental projects.

6) Recreation in Whitebark Pine Communities

Whitebark pine ecosystems offer important recreational opportunities and are often a primary element of spectacular high elevation landscapes. A common management theme for recreation in Whitebark pine forests is to minimize the evidence of man. Lands are delicate and have significant management concerns associated with them. Whitebark Pine communities are exceptionally susceptible to impact. Factors that might contribute to this are rocky soils, open vegetation, and short growing seasons. Whitebark pine forests are not exceptionally resilient to human disturbance. "Generally, the suitability of Whitebark pine forests for trails appears to be good to moderate, while suitability for campsites is moderate to poor" (Cole, 1989). Tree damage, soil compaction, and vegetation loss are common concerns. Once established, campsites tend to be used repeatedly. Once damage occurs, recovery takes a long time. "Without assistance, trails and campsites in Whitebark Pine ecosystems will require decades, if not centuries, to recover" (Cole, 1989).

3.3 Wildlife Habitats and Occurrence

Ecological disturbances, resulting from either natural processes or human-caused events, are responsible for altering landscape patterns and influencing wildlife populations. Disturbances from natural processes (e.g. landslides, fire, and insect or disease outbreaks) direct landform and vegetation patterns, forming the foundation for wildlife habitat and influencing wildlife abundance and composition. Humans can alter landscape patterns and create features such as roads and trails, or they can alter the frequency, extent and magnitude of natural disturbances such as fire. Wildlife species will occupy their preferred niche in the landscape, and move from place to place as forest structures change and different habitat conditions develop (Clark and Sampson 1995).

In the absence of disturbance, vegetation grows through a gradual and more predictable sequence of change called succession. As vegetation moves through each stage of succession, the composition of wildlife species shifts accordingly. All wildlife possesses a certain successional strategy. Some species are adapted to the early stages of forest development where grasses, forbs and shrubs dominate the site, while others are better suited for the later stages of forest development. Other species have adapted to a wide array of vegetation patterns. Because species and their environments are dynamic, it is highly questionable whether various wildlife species will persist indefinitely in some areas where they are found today.

A. Characterization of Habitats

As discussed in the Vegetation Section (Chapter 2), wildfire and tree harvesting have been the major disturbances shaping the forest vegetation in the Whitebark Pine project area. Since the fires of the mid-1800's, a majority of the forested landscape has progressed into mature and old growth size class. Past forest harvesting has altered the spatial pattern of the landscape, reverting some areas to the early succession (seedling/sapling) phase of forest development.

Blister rust and fire exclusion have changed the species composition of stands within the Whitebark Pine area. Today's landscape contains only remnants of whitebark pine, white pine, ponderosa pine and western larch. Subalpine fir, Douglas-fir, and grand fir have replaced much of the growing space once occupied by these species, effectively crowding them out. This change in species composition has altered ecosystem biodiversity. The dominance of subalpine fir at higher elevations and Douglas-fir at lower elevations has increased the forest's vulnerability to drought stress, insect and disease infestations, and large catastrophic wildfires.

Given the often-conflicting habitat requirements of many species, a sound strategy for management seems to be to try to maintain a complex pattern of forest types and age classes across the landscape that encourages biodiversity and tries to emulate the historic patterns.

1) Wildlife and the Whitebark Pine Ecosystem

Whitebark pine is considered a *keystone species* of the upper subalpine ecosystems. A keystone species is one which "may determine the ability of a large numbers of other species to persist in the community" (Tomback et al. 2001, pg. 7). Whitebark pine communities provide valuable wildlife habitat at high elevations, especially where other conifers cannot grow. These forests provided nesting sites and shelter in addition to unusually large and nutritious seeds. Indeed, researchers have documented some 51 species of birds and mammals using whitebark pine communities, with 20 of these species relying on whitebark seeds as forage (Tomback and Kendall 2001, pg.248-250). This includes such species as the Clark's nutcracker, mountain chickadee, red-breasted nuthatch, red crossbill, red squirrel, golden-mantled ground squirrel, deer mouse, black bears, and grizzly bears. The whitebark pine seed is considered to be particularly important for grizzly bear populations in the East Front of the Rocky Mountains, the greater Bob Marshall Ecosystem and the Greater Yellowstone area. Grizzly bears in these areas consume large amounts of whitebark pine seed cached in pine squirrel middens in late summer and early fall.

The Clark's nutcracker and the red squirrel are the major dispersers of whitebark pine seeds. Whitebark pine seeds are a primary food source for Clark's nutcrackers, and the whitebark pine depends on nutcrackers almost exclusively for seed dispersal (see below). In addition, pine squirrels compete with nutcrackers for whitebark seed by stashing cones for storage as a winter food supply (Tomback 2001, pg. 90-91).

2) Clark's Nutcracker

The Clark's nutcracker is closely associated with the ecology of the whitebark pine community. Indeed, the Clark's nutcracker and whitebark pine are considered to be *coevolved mutalists*. This means that they have a mutually beneficial interaction that has resulted in the whitebark

pine evolving a total dependence on the Clark's nutcracker for seed dispersal. While the nutcracker relies on whitebark pine seed it also will harvest and cache seeds from other pines found throughout its range including ponderosa pine, western white pine, Douglas-fir, limber pine, Great Basin bristlecone pine, southwestern white pine, and Colorado pinon (Tomback and Kendall 2001).

The Clark's nutcracker's sturdy bill, sublingual pouch, and remarkable spatial memory enable it to open whitebark pine cones, remove the seeds, plant thousands of seeds during a good cone crop year, and remember where most of them are. Nutcrackers select a variety of microsites when caching seeds including the base of trees, in open terrain, in rock fissures, and open, disturbed terrain. Recent burns are particularly important caching sites for nutcrackers (Tomback 2001).

The Clark's nutcracker nests earlier than any other songbird. Courtship begins in early December and the first eggs appear as early as January. Nestlings are primarily fed seeds recovered from caches made the previous summer and fall in addition to insects (Tomback 2001).

During the last century, blister rust and fire suppression have altered the temporal and spatial distribution of prime Clark's nutcracker habitat in the region. Today's landscape contains only remnants of preferred cone crop tree species like the whitebark pine, white pine, and ponderosa pine. Subalpine fir, lodgepole pine, Douglas-fir, and grand fir have replaced much of the growing space once occupied by these species, effectively crowding them out. Large wildfires are much more infrequent and timber harvest has removed trees which are dead, dying or infected with insects. Conversely, fire suppression has resulted in a sharp decrease of natural wildfires in the whitebark pine zone. The net result is a dramatic reduction in the disturbance agent which best facilitates the seed-caching behavior of the Clark's nutcracker and the continuing regeneration of the whitebark pine.

3) Species Screen

The combination of the various vegetation types and other environmental components in and around the project area provide habitat for an assortment of wildlife species. To facilitate the management of all wildlife species associated with the project area and to help insure population viability, the Idaho Panhandle National Forests selected a number of species to help assess the impacts of land management decisions on the wildlife resource. Most of these species are referred to as Management Indicator Species (MIS) and include threatened and endangered species, sensitive species, and other species whose habitat is likely to be changed by Forest management activities. Sighting records, literature, previous planning records, and habitat characterizations were used to screen MIS for their relevancy to a detailed study.

The Council on Environmental Quality (40 CFR 1502.2) directs that effects be discussed in proportion to their significance. Some issues about wildlife and their habitat require a detailed analysis to determine effects on a particular species. Other issues may either not be affected by proposed activities, are affected at a level that does not increase risk to the species, or can be adequately mitigated by altering the design of the project. Generally, these issues do not require a detailed analysis.

Table 3-5 displays the results of this screening process for Threatened, Endangered and Sensitive species (TES), Management Indicator Species (MIS), and other wildlife of interest or special concern known to occur on the Idaho Panhandle National Forests. Check marks denote level of analysis for each species.

USDA Forest Service policy (FSM 2670) requires a documented Biological Assessment of Forest Service programs and activities in sufficient detail to determine how an action may affect threatened, endangered, proposed, or sensitive species. The Biological Assessment for this project can be found in the Project File. The documentation of effects and rationale for conclusions for Sensitive species are consolidated into the main text of this EA and in the Project File. A summary of conclusion of effects for MIS can be found in Appendix B.

Table 3-5 Management Indicator Species analyzed in the project area.

	No detailed discussion and analysis is necessary for species or habitat presumed not to be present within the affected area. The rationale for no further analysis for these species can be found in the project file.	Supporting rationale is presented in Appendix A for those species that are presumed to be present but not necessarily affected by the proposed actions. No detailed discussion and analysis is necessary.	Species considered present and potentially affected by the proposed actions are carried forward into a detailed discussion and analysis in Environmental Consequences Section.
Threatened and Endangered Species			
Woodland caribou (*Rangifer tarandus caribou*)			✓
Bald eagle (*Haliaeetus leucocephalus*)	✓		
Canada lynx (*Lynx canadensis*)			✓
Grizzly bear (*Ursus arctos horribilis*)			✓
Northern gray wolf (*Canis lupus*)		✓	
Sensitive Species			
Black-backed woodpecker (*Picoides arcticus*)			✓
Common loon (*Gavia immer*)	✓		
Flammulated owl (*Otus flammeolus*)		✓	
Harlequin duck (*Histrionicus histrionicus*)		✓	
Northern goshawk (*Accipiter gentilis*)		✓	
Peregrine falcon (*Falco peregrinus anatum*)	✓		
White-headed woodpecker (*Picoides albolarvatus*)		✓	
Fisher (*Martes pennanti*)		✓	
Northern bog lemming (*Synaptomys borealis*)	✓		
Townsend's big-eared bat (*Corynorhinus townsendi*)	✓		

Wolverine (*Gulo gulo*)		✓	
Boreal toad (*Bufo boreas*)		✓	
Coeur d'Alene salamander (*Plethodon vandykei idahoensis*)	✓		
Northern leopard frog (*Rana pipiens*)	✓		
MIS and Others			
Pileated woodpecker (*Dryocopus pileatus*)		✓	
American marten (*Martes americana*)		✓	
Rocky Mountain elk (*Cervus elaphus nelsoni*)		✓	
White-tailed deer (*Odocoileus virginianus*)		✓	
Forest land birds		✓	
Snag habitat		✓	

B. Affected Environment

This section includes a brief discussion of species habitat preferences and requirements. It also describes the environmental baseline and relevant habitat components that may or may not be affected by the alternatives if they were implemented. The information in this section is based on scientific literature, district wildlife atlases, professional judgment, and findings of stand information collected in the field.

An important concept in the existing condition descriptions and analysis is the difference between capable habitat and suitable habitat. The following definitions are helpful in distinguishing between these two terms and the concepts they are based on.

Capable habitat: Refers to the inherent potential of a site to produce essential habitat requirements of a species. The vegetation on the site may not be currently suitable for a given species because of variable stand attributes such as unsuitable seral stage, cover type or stand density, but it has the fixed attributes that would enable it to provide those variables under appropriate conditions. Some examples of fixed attributes are slope, aspect, soil or elevation.

Suitable Habitat: Wildlife habitat that 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.

1) Threatened and Endangered Species

1-a. Woodland Caribou

The Selkirk Mountain population is generally found above 4000 feet elevation in Engelmann spruce/subalpine fir and western red cedar/western hemlock forest types. They are highly adapted to upper elevation boreal forests and do not occur in drier low elevation habitats except as rare transients. Seasonal movements are complex and normally occur as altitudinal patterns, moving to traditional sites for different seasons. The population is threatened by habitat fragmentation and loss, and excessive mortality from predators and illegal human take (USDI 1983). Mortality from predators is outside the ability of the Forest Service to control. Other risk factors are addressed in more detail below.

Reference Condition: The Selkirk caribou population was emergency listed as Endangered in 1983 and a final ruling of its status appeared in the Federal Register in 1984 (USDI 1983). The recovery area for the population resides in the Selkirk Mountains of northern Idaho, northeastern Washington and southern British Columbia, Canada.

As part of the 1986 plan for recovery, caribou were augmented into the ecosystem from source populations in British Columbia between 1987 and the present. By 1990, the population was increased to approximately 55 to 70 animals. The population remained somewhat stable through the early 1990's but a decline in numbers occurred in 1996 that was believed to be the result of increased rates of predation. Caribou numbers vary annually, and have been regularly followed with annual censuses and monitoring of radio-collared animals. A current survey of caribou within the Idaho portion of the recovery area found 2 animals (W. Wakkinen, pers. com. 2002).

Habitat management for woodland caribou management was originally provided by the Forest Plan (USDA 1987). Habitat analysis for this project was conducted using a caribou habitat capability (HCI)/suitability (HSI) model (Allen-Johnson and Deiter 1993, and Allen 1998b), which was derived from habitat research on the transplanted caribou as well as earlier research and a preliminary model developed by the recovery team in 1985 (Scott and Servheen 1984, Summerfield 1985, and Warren 1990, Allen 1998a). This mid-scale model uses existing timber inventory data to classify stands as to their capability versus current suitability for caribou use on a seasonal basis. Unlike the Forest Plan, which assumed habitat to have discrete seasons of use, this newer model may rank stands as high quality habitat for more than one season of use. Conversely, not all stands have high enough quality to rank as suitable habitat. In general, suitable habitat (HSI>=0.5) are those stands that are at elevations >5000 ft, <40% slope, in 81+ year-old stands of spruce/fir, or 4500-5000 ft, <40% slope, 120+ year-old stands of cedar/hemlock. This fits the definition of critical caribou habitat within the Forest Plan, (pg. V-3).

The 1994 woodland caribou recovery plan recognizes six seasonal habitats based on behavioral needs, movements, and habitat use, including: early winter (~November 1 – January 15), late winter (~January 16 – May 15), spring (~May 16 – July 15), calving (pregnant cows, June 1 – July 15, summer (July 16 – September 15), and rut (September 16 – October 31). However, subsequent research suggests that five seasonal habitats are appropriate, resulting in selection

of similar habitats from July 15 to the end of October (i.e. summer and rut) (Allen 1998b). In general, these seasonal habitats can be summarized as follows:

1) *Early winter* includes the use of mature-to-old growth cedar/hemlock (**EWCH**)(age >=120 years) and spruce/subalpine fir (**EWSF**) stands with >70% canopy closure, slopes < 40%, between the elevations of 3500-6200. Appropriate subalpine fir stands stands need to be within one mile of useable cedar/hemlock stands to be suitable (Allen 1998b).
2) *Late winter* includes the use of 80-year-old and older subalpine fir/spruce stands on 'dry' habitat types with 11-70% canopy cover, and slopes of < 40% found between 5500-7000 ft. elevation.
3) *Summer/rut* habitat is similar to late winter except caribou range between 5500-6500' elevation.
4) *Spring* habitat includes 80 –year-old and older stands of subalpine fir/spruce with canopies ranging from 1-40%, and slopes of <40% found between 5000-6500 ft. elevation.
5) *Calving* habitat includes 80-year-old and older subalpine fir/whitebark pine and nonforest stands located at the highest elevations (5500-7400'), all slopes, and 1-40% canopy cover.

Stands that have HSI>=0.5 for all seasons except early winter cedar/hemlock are considered "key" habitat (**Key**), because they are mid-elevations that have the habitat quality to be useful for more than one season. Early winter cedar/hemlock (EWCH) is probably the most limiting seasonal habitat for woodland caribou.

Forest Service-controlled factors that limit caribou recovery may include habitat fragmentation and loss, and illegal human take. Since this project will not require road building or access changes, and will not result in increased winter recreational access, it would cause no increase in caribou mortality from illegal human take. While the project treatments will take place over a relatively wide area, actual treatment areas are too small to cause landscape-scale habitat fragmentation. Project impacts are likely to be limited to the loss of currently suitable seasonal habitats, which will be determined by tracking the amount of seasonal habitats modified (i.e. improved or lost) based on individual Caribou Management Units (CMUs). Of particular concern are the acres of key and early winter habitat altered as a result of project implementation.

Existing Condition: Some 76% of the project area is within the woodland caribou recovery area, including five Caribou Management Units (CMUs) designated for its recovery. This includes all or portions of the Cow, Smith, Long-Parker, Trout-Ball, and Myrtle CMUs (Table 3-6). Management Plans for each CMU have not been completed at this time. However, most seasonal habitats have increased during the last century as the Selkirk Mountains recovered from large wildfires in the 1800's (Allen 1999). Only early winter cedar/hemlock habitat has decreased in the Smith and Trout-Ball CMUs during the last century due to commercial timber harvest (Allen 2001). There is a high level of linkages and travel corridors between suitable habitats in the project area. This includes large, cohesive patches of suitable habitat for all subalpine fir seasonal habitats, including the early winter component.

Table 3-6 Current condition of the Caribou Management Units in the project area.

CMU (% in the Project Area)	Seasonal Habitat Capable/Suitable Acres in CMU (% of Capable that is Currently Suitable)						
	Late Winter	Spring	Calving	Summer/Rut	Key[3]	Early Winter (WC/WH)	Early Winter (SAF)
Cow (17)	11,697/4,937 (42)	17,900/6,280 (35)	6,235/3663 (59)	13,402/5,492 (41)	4,627/2,787 (60)	5,765/2,210 (38)	10,351/5,872 (57)
Smith (100)	7,284/4,804 (66)	9,616/5,304 (55)	6,400/3,948 (62)	7,570/4,888 (65)	3,319/2,423 (73)	5,446/2,524 (46)	8,956/6,403 (72)
Long-Parker[1] (100)	6,562/3,578 (55)	7,340/2,973 (41)	6,890/3,650 (53)	5,950/3,164 (53)	3,827/2,318 (61)	2,931/1,516 (52)	5,198/2,330 (45)
Trout-Ball[2] (100)	10,253/7,589 (74)	9,904/6,286 (64)	9,415/7,428 (79)	8,861/6,298 (71)	5,697/4,735 (83)	2,741/1,014 (37)	7,619/6,163 (81)
Myrtle (100)	11,306/8,422 (75)	14,573/8,344 (57)	8,643/7,740 (90)	12,203/7,740 (65)	5,502/4,809 (87)	5,062/2,058 (41)	11,736/8,841 (75)

[1]Of the 31,190 acres in this CMU, only 18,976 acres (60.8% or all of Long Canyon watershed) have been analyzed for capability/suitability as caribou habitat (Allen 2001). Assessment of the Parker Creek drainage is part of an on-going project to produce a comprehensive caribou habitat map for the ecosystem. In general, the Parker Creek drainage provides little suitable habitat due to large wildfires in 1928 that burned throughout much of the drainage.

[2] Of the 25,667 acres in this CMU, only 13,119 acres (69.2% or all of Ball Creek watershed and the western portion of the Trout Creek watershed) have been analyzed for capability/suitability as caribou habitat (Allen 2001). Assessment of the eastern portion of the Trout Creek drainage is part of an on-going project to produce a comprehensive caribou habitat map for the ecosystem.

[3]Key habitats are those areas with Habitat Suitability Index (HSI)≥0.5 for late winter, spring, calving, and summer/rut.

Transplanted caribou and their offspring used suitable habitat in the Myrtle, Ball, Trout, Fisher, Long Canyon, and Smith Creek drainages from 1987-2001. The remaining handful of caribou consistently used the headwater regions of Myrtle, Ball, Trout, and Smith Creek during the last 5 years. Maps showing the locations of Caribou Management Units and the proposed treatment areas are included in Chapter 4.

1-b. Canada Lynx

Both snow conditions and vegetation types are important factors to consider in defining lynx habitat. In North America, the distribution of lynx is nearly coincident with that of the snowshoe hare, its primary prey. Lynx occur in boreal, sub-boreal and western montane forests and are uncommon or absent from the wet coastal forests of North America. Lynx habitat quality is believed to be lower in the southern periphery of its range because landscapes are more heterogeneous in terms of topography, climate, and vegetation (Ruediger et al. 2000).

Lynx are considered low-density species with home ranges averaging 24 square miles, depending on prey abundance. In northern Idaho and northwestern Montana, lynx generally occur in moist, cold habitat types above 4,000 feet elevation. However, in parts of northern

Idaho, western red cedar and western hemlock habitat types support relatively high densities of hares, and lynx appear to make regular use of these lower habitats documented by historical and current lynx sightings. These lower elevation habitats are boreal in nature and have long winters of deep snow packs.

Reference Condition: The Canada lynx was listed as Threatened on March 21, 2000. The lynx is one of the three species of wild cats that occur in the temperate forests of North America. Lynx populations in Alaska and most of Canada are generally considered stable to slightly dropping. The conservation of lynx populations is of concern in the western mountains of United States because of the peninsular and disjunct distribution of suitable habitat at the southern periphery of the species' range. Both historic and recent lynx records are scarce, which makes identifying range reductions and determining the historical distribution of populations in the region difficult (Koehler and Aubrey 1994).

The Canada Lynx Conservation Assessment and Strategy {LCAS} (Ruediger et al. 2000) describes a number of risk factors that potentially limit lynx recovery (Table 3-7). Of these, the Forest Service can directly or indirectly influence several risk factors that can impact lynx populations, including alteration of forest habitats, expansion of the range of competitors/predators through snow compaction activities, and providing increased levels of human access into lynx habitat which can then lead to mortality from trapping. Since this project will not result in improved winter access, there would be no additional lynx mortality from illegal human take or predators, and no increased competition from other predators resulting from additional snow compaction. Project impacts are likely to be limited to the loss of denning habitat or the modification of other currently suitable habitats, which will be determined by tracking the amount of habitat modified based on individual Lynx Analysis Units (LAUs).

The LCAS includes five general standards (indicators) typically tracked for assessment of land management activities:

1) maintain at least 70% of lynx habitat within each the LAU in suitable habitat conditions;
2) maintain denning habitat comprising at least 10% of the lynx habitat within an LAU (denning habitat should be well distributed and in patches larger than five acres);
3) management activities would not alter more than 15% of lynx habitat within a LAU to an unsuitable condition within a 10-year period;
4) maintain vegetative structure that facilitates movement of lynx along important connectivity corridors such as riparian areas, saddles and ridges; and
5) manage for no net increase in groomed or designated over-the-snow routes and snowmobile play areas (Ruediger et al. 2000).

Table 3-7 Risk factors affecting Canada lynx recovery.

	Lynx Population Parameters of Concern:			
	Productivity	Mortality	Movements	Large Scale
Risk Factors	Timber Harvest	Trapping	Transportation / Utility Corridors	Fragmentation of refugia
	Wildland Fire Management	Predator Control	Land Ownership Patterns	Movement/Dispersal across shrub-steppe habitats
	Roads & Trails	Incidental/Illegal Shootings		Habitat degradation by non-native invasive plant species
	Livestock Grazing	Competition/Predation as influenced by Human Activities		
	Human Developments	Highways and associated collisions		

Existing Condition: Some 91% of the project area is within habitat managed for lynx, including six Lynx Analysis Units (LAUs) designated for its recovery. LAUs are intended to provide the fundamental unit for evaluating and monitoring the effects of management activities on lynx habitat. Maps showing the locations of Lynx Analysis Units and the proposed treatment areas are included in Chapter 4.

The IPNF has completed initial habitat suitability models to predict the amount of lynx habitat present on the district (Table 3-8). Application of the models for the six LAUs within the project area includes approximately 125,655 acres within all LAUs, of which roughly 114,339 acres are capable of producing suitable habitat, and approximately 111,987 (98%) acres are currently suitable. As these models are refined and verified, the acreages are expected to change to better reflect known conditions.

Based upon research findings, capable lynx habitat is grouped in the following broad categories:

- *Unsuitable*: capable lynx habitat that has, through natural or artificial processes, lost vegetation of sufficient height to provide forage and cover for snowshoe hare populations through a winter of average snow depth.

- *High Quality Forage*: includes dense stands of regenerating conifers – both with (*late successional forage*) and without (*early successional forage*) the presence of mature overstory canopy – that provide adequate forage and cover to support snowshoe hare populations during a winter of average snow depth.

- *Denning*: mature conifer stands that contain a nearly continuous overstory canopy (>70%) and enough coarse woody debris of structural complexity to provide denning opportunities for a female lynx rearing kittens.

- *Low Quality Forage*: this catch-all category encompasses those stands that do not fit into other categories, but are within capable habitat and contain sufficient vegetation to be considered suitable. These stands may supply the occasional denning or foraging opportunity, or merely contribute forested habitat through which lynx can travel with a sense of security.

Since LAUs can contain a significant amount of land that is not considered lynx habitat (talus slopes, open water, dry-site vegetation, etc.), percentages of each habitat component are reported as the proportion of capable lynx habitat within each LAU, rather than as a percentage of the total LAU.

Lynx presence has been documented, historically and currently, throughout the Idaho Panhandle. Lynx tracks have been documented within the project area near Long Canyon Creek (district records).

Table 3-8 Current condition of the Lynx Analysis Units in the project area.

Lynx Analysis Unit (LAU)	Percent of LAU in Project Area	Total Size and Portion Capable of Being Lynx Habitat (Acres)	Currently Suitable Denning Acres / (%)	Currently Suitable High Quality Forage Acres / (%)	Currently Unsuitable Preforage Acres / (%)	Change to Unsuitable in Last Decade Acres / (%)
Ball	100	16,217 / 14,519	3,048 / (21.0)	1,809 / (12.5)	307 / (2.1)	0
Cow	45	22,100 / 19,988	1,752 / (8.8)	2,750 / (13.8)	805 / (4.0)	411 / (2.1)
Long-Parker	100	32,863 / 32,332	4,366 / (13.5)	3,204 / (9.9)	164 / (0.5)	164 / (0.5)
Myrtle-Cascade	100	27,922 / 24,158	5,154 / (21.3)	2,082 / (8.6)	376 / (1.6)	30 / (0.1)
Trout-Fisher	100	17,690 / 10,194	2,363 / (23.2)	408 / (4.0)	662 / (6.5)	662 / (6.5)
Upper Smith	100	20,855 / 13,148	3,379 / (25.7)	596 / (4.5)	38 / (0.3)	0

1-c. Grizzly Bear

Populations of grizzly bears persist in those areas where large expanses of relatively secure habitat exist and where human-caused mortality is low. Grizzly bears are considered habitat generalists, using a broad spectrum of habitats. Use patterns are usually dictated by food distribution and availability combined with a secure environment. Grizzlies commonly choose low elevation riparian areas and wet meadows during the spring and generally are found at higher elevation meadows, ridges, and open brush fields during the summer.

Reference Condition: The grizzly bear was listed as threatened in 1975. It was originally distributed in various habitats throughout western North America. Today, it is confined to less than 2 percent of its original range and represented in five or six population centers south of Canada, including the Cabinet-Yaak and Selkirk ecosystems in northeastern Washington, northern Idaho and northwestern Montana. Habitat loss and direct and indirect human-caused mortality are related to its decline (USDI 1993).

The U.S. portion of the Selkirk and Yaak Ecosystems is divided into Bear Management Units (BMUs) ranging in size from approximately 30 to 160 mi^2, which are administered by the Idaho Panhandle, Kootenai and Colville National Forests, and Idaho Department of Lands. BMUs are

designed to approximate the average home range of a female grizzly bear (~100 mi^2), facilitate documentation of bear numbers and distribution, and track cumulative effects within the Ecosystem (Christensen and Madel 1982).

The Recovery Plan indicates the most important element in recovery is securing adequate *effective habitat*. This is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance imposed on the area. Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (USDI 1993). By controlling motorized access, certain objectives can be achieved including minimizing human interactions and potential grizzly bear mortality, reducing displacement from important habitats, and minimizing habituation to humans. This strategy involves achieving specified levels of security (the 1987 IPNF Forest Plan Standard), core habitat, and road densities (USDI 2001) (Table 3-9).

Table 3-9 Management Activity Indicators for Grizzly Bear

Habitat Effectiveness Categories	Standards
Forest Plan Security	Each BMU must maintain security of at least **70%**
Core	The BMU should have at least **55%** core habitat. However, if the BMU is currently below the required 55% then there should be no net loss of core before, during, or after proposed management activities.
Total Motorized Route Density (TMRD)	No more than **26%** of the BMU shall have a TMRD >2mi/mi^2
Open Motorized Route Density (OMRD)	No more than **33%** of the BMU shall have an OMRD >1 mi/mi^2

Existing Condition: The proposed project includes portions of three Grizzly Bear Management Units (BMUs). Existing habitat effectiveness is listed in Table 3-10. Maps showing the locations of Grizzly Bear Management Units and the proposed treatment areas are included in Chapter 4.

Table 3-10 Existing habitat effectiveness for the Bear Management Units included in the Whitebark Pine project area, 2003.

Bear Management Unit (BMU)	Size of BMU (sq. miles)	Security (%)	Core (%)	TMRD (% of BMU >2 mi./$mi.^2$)	OMRD (% of BMU >1 mi./$mi.^2$)
Long-Smith	103	81	73	13	21
Ball-Trout	90	85	72	9	17
Myrtle	100	70	60	19	30

2) Sensitive Species

2-a. Black-Backed Woodpecker

This woodpecker nests in a variety of forest types, especially lodgepole pine, subalpine fir, and western larch. It excavates a nest cavity in a live or dead tree. Nest trees typically have heart rot or other decay. Unlike most other woodpeckers, this species uses relatively small, hard snags (Saab and Dudley 1998). Nest trees can be as small as 5" dbh. Furthermore, nest selection does not appear to be limited by overstory canopy closure.

Black-backed woodpeckers tend to flourish in early post-fire (3-5 years) habitat (Hutto 1995). Year-round, they are uncommon residents of coniferous forests naturally occurring at low population levels. Following fire or insect and disease outbreaks that increase populations of wood-boring insects, they experience local population increases and temporary range extensions. The availability of habitat for this species is negatively affected by the prevention of fires and post-fire salvage harvesting (Hutto 1995).

Research in Oregon found that black-backed woodpeckers' nest sites were located in habitats with more snags per acre than other woodpecker species (Bull et al. 1986). It is possible that this species requires higher snag densities than other woodpeckers.

Reference Condition: Historically, ecosystems in north Idaho were shaped by disturbance patterns that altered the size and distribution of forest structures across the landscape. Wildfire, wind damage, insects, and disease, and forest succession created snags in areas that ranged in size from individual trees or small patches, to entire drainages (1,000 acres or larger). Consequently, snag densities would vary across the landscape, from areas with low levels of snags to other areas with abundant snags. In the latter case, densities of black-backed woodpeckers temporarily increased in response to an enhanced foraging and nesting opportunities.

During the last century, fire suppression and timber harvest have altered the temporal and spatial distribution of prime black-backed woodpecker habitat. Large wildfires are much more infrequent and timber harvest has removed trees which are dead, dying or infected with insects. In addition, firewood cutting along unrestricted roads has resulted in a lack of appreciable densities of snags along these corridors. Conversely, fire suppression has resulted in a sharp increase of smaller diameter trees and snag recruitment.

Current Conditions: Because this species' optimal habitat is recent burns, most of the acreage of the project area is capable habitat at some point after a burn. Other habitat, particularly high risk lodgepole pine, is less represented but still available as it ages.

Snag density in general in the assessment area is moderate, with a considerable range. Some areas, such as the whitebark pine stands at high elevations, have an extremely high snag density. Other stands, such as some older clearcut timber harvesting units or open grassy faces, have a low snag density. The favored habitat of black-backed woodpeckers, recently

burned areas, are relatively uncommon in the project area except where timber harvesting and site preparation have resulted in some burned trees. Only 5.5% (approximately 7,400 acres) of the project area has burned during the last 50 years (see Vegetation/Fire section), including approximately 3,600 acres burned in the Myrtle Creek fire in September, 2003. However, snags produced from all but the most recent of these (the Myrtle Creek fire) would be too old to to provide optimal foraging for black-backed woodpeckers. Alternatively, the current mountain pine beetle infestation in lodgepole and whitebark pine likely provides some increasing foraging opportunities for this species. Approximately 2,400 acres of the Myrtle Creek fire were classified as "medium" or "high" severity burn. Hejl and McFadzen (2000) indicate that the severe burn intensity is the most valuable for black-backed woodpeckers, at least in the first one to five years after the fire. Therefore, high severity portions of the burn are expected to be high quality black-backed woodpecker habitat, and even medium severity portions probably offer adequate snag densities to be selected by this species.

Black-backed woodpeckers have been documented foraging and nesting throughout the district on some 38 occasions. Of these, only one was located within the Whitebark Pine project area.

3) Species Not Analyzed Further

The following species are not analyzed in detail, as shown in Table 3-5. The supporting rationale is included in Appendix A.

Gray Wolf
Flammulated Owl
Harlequin Duck
Northern Goshawk
White-headed Woodpecker
Fisher
Wolverine
Boreal Toad
Pileated Woodpecker
American Marten
Rocky Mountain Elk
White-tailed Deer
Forest Land Birds

4) Snag Habitat

Design features of the project were devised to ensure the retention and selection of snags at a level and distribution to support viable populations of species that use snags and logs. Snags and snag replacements would be retained in all treatment units at levels recommended by the Region 1 Snag Management Protocol. The Snag Protocol recognizes that not all stands are able to meet snag guidelines, but that the overall goal is to provide adequate snag habitat over the landscape. Snag retention objectives exceed Forest Plans standards and snag retention levels developed by Thomas et al. (1979).

Potential effects to snag habitat are addressed in detail in descriptions of snag-dependent species (pileated woodpecker, flammulated owl, northern goshawk and fisher), and in the analysis of effects upon black-backed woodpecker.

Supporting rationale and information on snag habitat is included in Appendix A Species Not Analyzed Further.

E. Water Resources and Aquatics Habitat

1) Regulatory Framework

The regulatory framework governing management of watershed and fisheries for this analysis is based on:

- National Forest Management Act
- Endangered Species Act
- Clean Water Act and amendments
- State of Idaho's implementation of the Clean Water Act
- Rules Pertaining to the Idaho Forest Practices Act (Title 38, Chapter 13, Idaho Code, 2000)
- Executive Order 12962 (Recreational Fishing)
- State of Idaho – Governors Bull Trout Plan

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 the effects on these species and the reason for their choice as management indicator species be documented (36CFR219.19(a)(1)). Direction is also included in the Idaho Panhandle National Forests Forest Plan (USDA 1987). The Inland Native Fish Strategy (INFS; USDA 1995) amended some Forest Plan direction regarding stream and fish habitat protections measures. See Appendix B for details.

Section 7 of the 1973 Endangered Species Act (ESA) includes direction that Federal agencies, in consultation with the U.S. 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.

Under authority of the Clean Water Act, the Environmental Protection Agency and the States must develop plans and objectives that will eventually restore identified stream segments of concern. No stream segments within the White Bark Pine area are currently listed for any water quality constituent on the 303d list (Idaho DEQ, 1998 303(d) list, see project file).

The Forest Service has agreements with the State to implement Best Management Practices or Soil and Water Conservation Practices for all management activities. Proposed activities will be in compliance with the guidelines in the Soil and Water Conservation Handbook (Forest Service Manual 2509.22), which outlines Best Management Practices that meet the intent of the water quality protection elements of the Idaho Forest Practices Act.

Executive Order 12962 (June 7, 1995) states objectives "to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by: (h) evaluating the effects of Federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries and document those effects relative to the purpose of this order."

The mission of the Governor's Bull Trout Plan is to "…maintain and or restore complex interacting groups of bull trout populations throughout their native range in Idaho" (State of Idaho 1996). Details about this Plan can be found in Appendix B – Aquatics Regulatory.

The IPNFs Forest Plan (1987) Goals, Standards, and Guidelines applicable to the Whitebark Pine project are as follows:

- Manage the soil resource to maintain long-term productivity (Goal 17, p. II-2).
- Maintain high quality water to protect fisheries habitat, water based recreation, public water supplies, and be within state water quality standards (Goal 18, pg. II-2).
- Best Management Practices will be used in order to ensure that activities comply with the state's water quality standards (Objective 1n, pg. II-9), (Standard, Water 1-3, pg. II-33).
- Application of BMPs will ensure that the quality of individual water bodies will not be significantly affected by sediment production (Objective 1n, pg. II-9), (Standard Water 2, Pg. II-33).
- Lands within public water systems will be managed for multiple uses within the water quality standards for public water supplies (Objective 1n, pg. II-9), (Standard Water 5, Pg. II-33).
- Streams not defined as public water systems, but used by individuals for such purposes, will be managed to the standards established by the state's forest practices rules and/or the National Forest's BMPs or to the fisheries standards, whichever is applicable (Standard Water 5, Pg. II-33).
- Activities within non-fishery drainages, including first and second order streams, will be planned and executed to maintain existing biota. Maintenance of existing biota will be defined as maintaining the physical integrity of the stream channels (Standard Water 6, Pg. II-33).
- Water quality that is below forest standards will be improved through restoration projects and through the scheduling of timber harvesting and road building activities where appropriate (Objective 1n, pg. II-9).
- Riparian areas will be managed to feature dependent resources while producing other resource outputs at levels compatible for the objective for dependent resources (Objective 1i, pg. II-6).

Requirements of the 1987 Forest Plan as amended by the Inland Native Fish Strategy (INFS) in 1995 will be applied to this project.

2) Methodology

The assessment of existing condition is critical to an environmental analysis because it both describes the current condition of the project area and provides a basis for comparing the effects of management alternatives. Information for the watershed and fisheries analysis was compiled using data from the Kootenai River Assessment (USDA draft in progress), district fish/hydrology files, stream inventories, field reviews, historical records, aerial photographs, analysis of watershed conditions, and published scientific literature.

Field review of the project area was done during the 2001 field season and the Fisher Peak Fire was evaluated in the field in 2002. The Myrtle Creek fire was reviewed extensively for the Burned Area Emergency Rehabilitation efforts (project file document)

3) Geographic Scope

The Whitebark Pine project area is located in the eastern portion of the Selkirk Mountains, approximately ten miles west of Bonners Ferry, Idaho. It is bounded on the east by the Kootenai River, and on the west by the Selkirk Mountains crest. The southern boundary is the divide between the Myrtle and Snow Creek drainages. The northern boundary follows the divide between the Smith Creek and the Grass and Boundary Creek drainages.

The project area encompasses approximately 135,000 acres of Parker, Trout, Fisher, Myrtle, Ball, Long Canyon, Smith, Lost, Clark and Burton Creek watersheds; all tributary to the Kootenai River (See Figure 3-6).

4) Reference Conditions

The faulting and glaciations that created the Purcell Trench lowered the base elevation of the Kootenai River. This has caused the creeks within the project area to aggressively scour down in elevation to try to match grade with the Kootenai. As a result, the lower portions of these valleys generally have steep stream gradients and steep V-shaped valley slopes, which are naturally more prone to landslides than surrounding slopes. Waterfalls, which create barriers to fish migration, are present on all major tributaries to the Kootenai within the analysis area.

4-a. Past, Present and Reasonably Foreseeable Activities

Fire: Various large fires burned over much of the Smith, Parker, Fisher and Myrtle, and the upper portions of the Long Canyon and Trout Creek watersheds in the late 1800's and early 1900's. These fires altered vegetative patterns within the affected watersheds. Fire has also affected the inherent stability of the land slopes and riparian areas. Relatively frequent low intensity fires have played a role in promoting effective distributions of land-stabilizing vegetation on slopes. Less frequent and higher intensity fires also have contributed to the maintenance of diverse vegetative patterns that also support stream conditions and fish habitats. These pulse

disturbances have resulted in rapid changes in flow and sediment load regimens to which the streams have had to adapt (Kaniksu Watershed Assessment, Draft).

Fire suppression activities have reduced the levels of fire in the ecosystem, increasing fuel loadings and fuel continuity; resulting in increased potential for severe fires (see Vegetation and Fire, Affected Environment). This was evident during the summer of 2003 within the Myrtle Creek watershed. The 3450-acre fire burned with mix severities and intensities within a short duration of time. It was estimated that without the measures undertaken in the Burned Area Emergency Rehabilitation, the fire had the potential of increasing sediment delivery to Myrtle Creek on the order of 3½ to 4 times the mean annual loading that occurred prior to the fire.

Timber Harvest: Timber harvest activities have occurred on a smaller scale within the analysis area compared to other areas on the district. Long Canyon, Parker Creek and Fisher Creek watersheds have not been logged and are roadless. Seven percent of the Trout Creek watershed was logged prior to 2001. This watershed has a road density of 1.4 miles per square mile. Eight percent of the Ball Creek watershed and 3% of the Myrtle Creek watershed were logged prior to 2001. These watersheds have road densities of 1.8 and 2.6 miles per square mile respectively. An additional 1100 acres have been harvested in the Myrtle Creek watershed for a sale sold in 2001 (See Vegetation and Fire, Chapter 3 for specific types of harvest treatments to be conducted). None of this harvest activity has occurred in the same locations as the treatment areas identified in this project. All roads are located down slope or down canyon of the proposed treatment locations for this project. Prior to timber harvest and road construction, sediment sources were from within the channels themselves, naturally occurring mass failures or due to large fires as described above.

Activities on Private Land: Forest Capital, a private forest management company, owns approximately seven sections of land in the Myrtle Creek drainage within the analysis area. Harvesting and road construction on this private land has increased the natural sediment supply. This is due to removal of canopy cover and soil disturbance during harvest activities as well as increased channel densities due to logging roads and skid trails. Roads, increased channel densities, and runoff can increase the potential for mass failures, which have the potential to deliver large amounts of sediment into stream channels.

Municipal Water Supply: Myrtle Creek currently serves, and is expected to continue to serve, as the municipal water supply for Bonners Ferry, Idaho.

Other Activities: Within the project area several other ongoing activities have contributed to the existing condition of the watersheds being analyzed. Firewood gathering along open roads, the treatment of noxious weeds along roads and some trails, and routine trail maintenance are examples of activities that have occurred and will continue to occur within the analysis area. These activities have not significantly increased erosion and sediment delivery over that which would naturally occur because they do not typically include ground-disturbing activities.

5) Existing Condition

Watershed

Beneficial Uses: The Idaho Department of Environmental Quality designates beneficial uses to be protected for each water body in the state. The beneficial uses for the creeks within the Whitebark Pine project area include domestic water supply, salmonid spawning, cold-water communities, primary contact recreation and agricultural water supply (IDAPA 58.01.02 pgs. 24-25, 27-30).

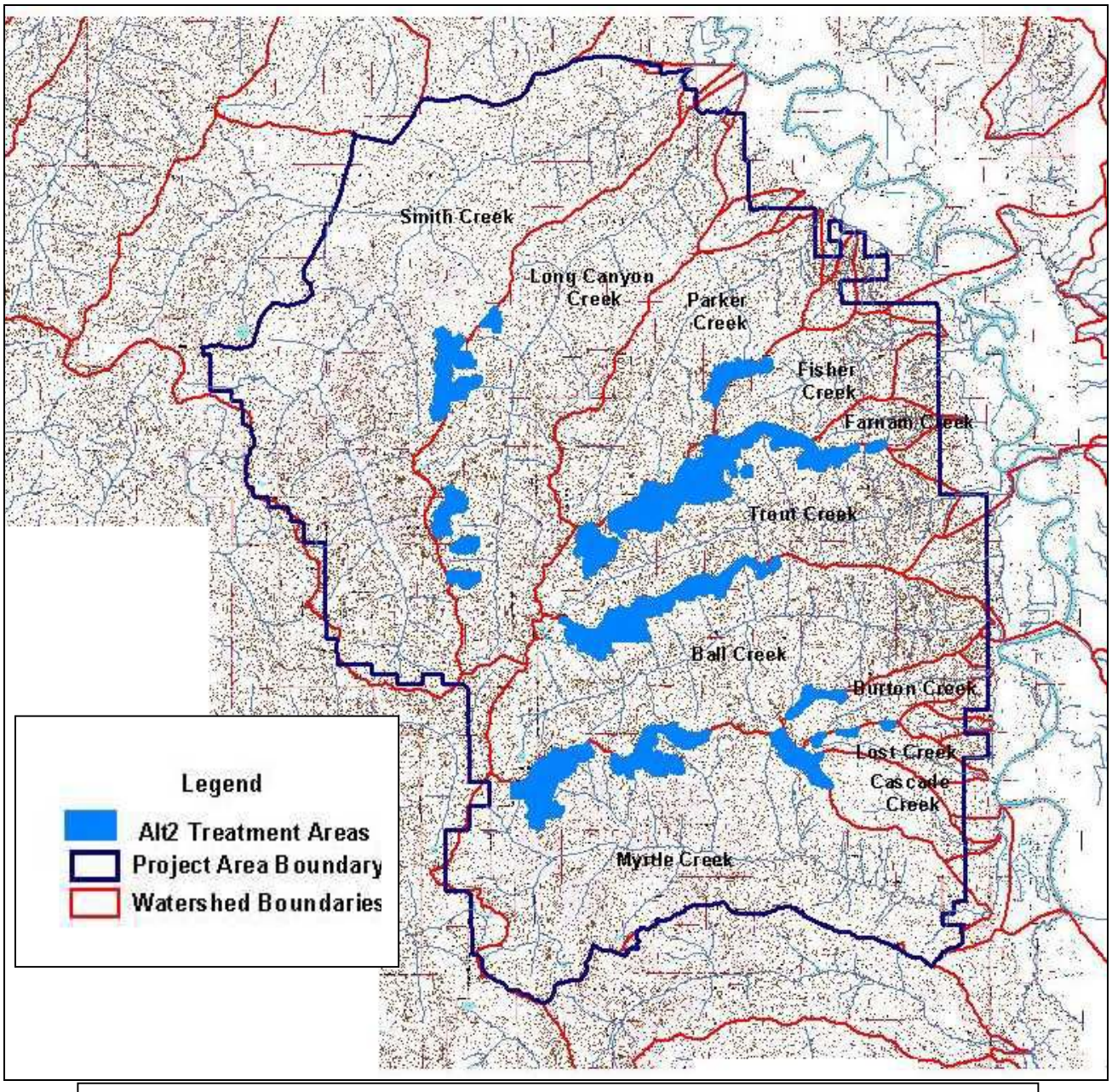


Figure 3-10 Watershed Boundaries and Alternative 2 Treatment Areas (Alternative 2 displays the maximum treatment)

Table 3-11 Beneficial Uses as Designated by the State of Idaho (IDAPA 58.01.02)

Watershed	Domestic Water Supply	Salmonid Spawning	Cold Water Communities	Agricultural Water Supply	Primary Contact Recreation
Long Canyon Creek		X	X	X	X
Parker Creek		X	X	X	X
Fisher Creek		X	X	X	X
Farnham Creek		X	X	X	X
Trout Creek		X	X	X	X
Ball Creek		X	X	X	X
Burton Creek		X	X	X	X
Myrtle Creek	X	X	X	X	X

Water Quality: None of the streams in the project area are listed by the State of Idaho as water quality limited stream segments (IDEQ 303(d) listing, 1998). All beneficial uses are assumed to be fully supported.

Watershed Processes - Runoff, Erosion and Sediment Delivery

The watersheds within the Whitebark Pine project area are snowmelt-dominated systems where peak flows are generated during spring melt periods. Elevation ranges from 1700 feet in the Kootenai Valley to above 7000 feet on the peaks within these watersheds. Information from the Kaniksu Watershed Assessment, Kootenai River Basin – Draft was reviewed to evaluate the existing condition of the watershed in the analysis area. This assessment determined functioning classes for the different watersheds by considering a full range of past and present watershed disturbance factors including management activities and natural hazards. This assessment resulted in an overall potential condition rating of “properly functioning condition” (PFC), “at-risk” or “nonfunctional” (project file).

Watersheds that are rated as “at risk” have high watershed integrity, but present or ongoing adverse disturbances are likely to compromise that integrity if the activities are not modified or corrected; or, they continue to have at least moderate watershed integrity that has been significantly compromised by adverse disturbances.

Watersheds rated as “PFC” are in good hydrologic condition and have reasonably high integrity. The streams are in dynamic equilibrium with their watersheds, and the watershed systems are fully functional. PFC watersheds fully support their integral biologic system.

Parker, Fisher, Long Canyon, Lost, Clark, and Burton Creek watersheds are rated as “PFC”. Myrtle Creek and Smith Creek watersheds are rated as “at risk” due to the moderate percentage of sensitive landtypes present within the watershed, the overall road density and the riparian road density (density of roads within the riparian areas). Trout Creek is also rate as “at-risk” due to road densities. Ball Creek is rated as “at-risk” due to the moderate percentage of sensitive

landtypes present within the watershed, the riparian road density and the percentage of the watershed that is detrimentally disturbed (project file).

F. Fisheries

The cumulative effects areas contain several fish-bearing streams, which are contained within the Kootenai River Basin. Fish species that inhabit or potentially inhabit streams in the Kootenai River Basin include the following:

- native populations of bull trout (Salvelinus confluentus),
- westslope cutthroat (Oncorhynchus clarki lewisi),
- interior redband trout (Oncorhynchus mykiss),
- mountain whitefish (Prosopium spp.),
- northern pike minnow (formerly squawfish; Ptychocheilus oregonensis),
- large-scale sucker (Catostomus macrocheilus),
- sculpin (Cottus spp.; primarily slimy sculpin, C. cognatus, and torrent sculpin, C. rhotheus),
- longnose dace (Rhinichthys cataractae; Simpson and Wallace 1982; district files).

Introduced fish species include the following populations:

- rainbow trout (O. mykiss);
- lake trout (also makinaw; S. namaycush);
- eastern brook trout (S. fontinalis);
- brown trout (Salmo trutta),
- kokanee (O. nerki); and
- redside shiner (Richardsonius balteatus; Simpson and Wallace 1982; district files).

The creation of hybrid fish between native westslope cutthroat trout and exotic rainbow trout, and between native bull trout and exotic brook trout may be present. The distribution of these fish is listed in Table 3-12.

Table 3-12 Summary of Fish Distribution Within the Cumulative Effects Area

Species Name	Long Canyon	Parker	Fisher	Farnham	Trout	Ball	Burton	Myrtle
Bull Trout	C				C			C
Westslope Cutthroat Trout (WCT)	L	C		L	C	C	C	
Eastern Brook Trout	C	C	C	L	C	C	C	C
Rainbow Trout (Coastal Form) (RBT)	C	C	C		C	C	C	C
Interior Redband								
Kokanee	C	C			C	C		C
Torrent Sculpin	L				L	L		C
Slimy Sculpin	L	L	L	L	L	L	L	L
Burbot								
Mountain Whitefish	L	L			L	L	L	C
Longnose Dace	L	L			L	L	L	C
Hybrid (WCT x RBT)	C	L	C		L	C		

C = confirmed presence; L = presence not confirmed, but is likely.

Streams listed in the above table flow into other fish-bearing waterways, specifically, Deep Creek and the Kootenai River. Since this project does not propose any road construction or reconstruction, machine- or hand-firelines will not be used, prescribed burning will occur only when conditions meet requirements for the "burning window", guidelines for soil quality will be followed, and INFS requirements will be met, it was determined that cumulative effects would not be detected in these larger streams and rivers. Non-fish bearing perennial streams and intermittent streams have been previously identified on project maps; they are generally the headwater tributaries of the watersheds mentioned above.

Due to the large number of fish species within the cumulative effects areas, analysis of direct, indirect, and cumulative effects to fish will use the concept of management indicator species (MIS). Under this concept, larger groups of organisms or communities are believed to be adequately represented by a subset of the group (Idaho Panhandle National Forest Plan 1987). The Forest Plan identifies westslope cutthroat, rainbow, and bull trout as potential MIS for fisheries conditions.

Westslope cutthroat trout and bull trout are native to some streams in the project area (Simpson and Wallace 1982; district files), while rainbow trout (coastal form) have been introduced into nearly every drainage. Currently, these fishes are known to utilize streams within the project area for spawning, rearing, and over-wintering. Although bull trout may have been historically present across the project area, they currently occur within the lower reaches of Myrtle Creek (Chris Downs IDF&G; personal comm.), Long Canyon, and Trout Creeks (District Files). Nonetheless, westslope cutthroat trout and bull trout have been selected as appropriate MIS for the fisheries analysis of this project. Although both of these fish do not exist in all streams, in general one of the two is found in all large streams. In addition, westslope cutthroat trout and bull trout are likely sensitive indicators for all the cold-water biota within the stream segments (Meehan 1991).

The life history of the torrent sculpin, Kootenai River white sturgeon, and burbot will be included below because they are either listed as threatened or endangered under the Endangered Species Act of 1973 (ESA), or as sensitive by the Regional Forester. Also, the torrent sculpin is a cold water species; the effects to these species will be similar where torrent sculpin is likely occur in the project area, and will be covered under the effects to the MIS. The interior redband trout have been documented within the Kootenai River Basin but not in the fish-bearing streams within the cumulative effects areas. White sturgeon and burbot are found only in the main stem of the Kootenai River and possibly large tributaries (e.g., Yaak River).

1) White Sturgeon

The Kootenai River population of white sturgeon is listed as endangered under ESA (Federal Register, Volume 59, No. 171, September 6, 1994). It is anadromous in most of the larger rivers in which they occur, but is landlocked in the middle and upper Columbia River system. The Kootenai River population range includes lake and river habitats between the outflow of Kootenai Lake in British Columbia and Kootenai Falls upstream in Montana. Most fish have been found only in the Kootenai River, but a few have been located in larger tributary streams (Graham 1981). In 1989, a State of Montana enforcement officer cited an angler for taking a

sturgeon in the Yaak River (USDA 1993). However, few have been sighted in other tributary streams.

Spawning takes place in May or June, occurring over rock or bedrock substrate in swift currents near rapids when water temperatures are between 8.9 and 16.7 degrees Celsius (Graham 1981). It is believed that most spawning in the Kootenai River occurs in the canyon section between Bonners Ferry and Kootenai Falls.

The Kootenai River population has declined and reproduction has been limited since the installation of the Libby Dam (Partridge 1983). The current population appears to be composed of mid-size and larger fish, with few juveniles. The May-July regulated flows (1975-80) are now one-fifth or less of the natural discharge patterns (1910-1965; USDA 1993). Daily mean temperatures have dropped approximately five degrees Celsius during the sturgeon spawning period due to selective withdrawal (USDA 1993). These changes have, in effect, converted the river to a third order headwater stream with an aberrant discharge pattern to which few organisms are adapted (USDA 1993).

The Kootenai River population of the white sturgeon is restricted to approximately 270 kilometers of the Kootenai River and do not inhabit any of the streams in the cumulative effects analysis area.

2) Bull Trout

Bull trout may be native to the all the 6th HUC watersheds within the project area (i.e. Myrtle Creek). They are listed as a "threatened" species under the ESA (Federal Register, Volume 63, No. 111, June 10, 1998). Currently bull trout are known to inhabit Long Canyon, Trout, and Myrtle Creeks within the cumulative effects areas. They appear to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Habitat characteristics including, water temperature, stream size, substrate composition, cover and hydraulic complexity have been associated with distribution and abundance (Jakober 1995; Rieman and McIntyre 1993).

Stream temperature (below 15 degrees Celsius; Goetz 1989, Garnett 2002) and substrate composition are important characteristics of suitable bull trout habitats. Bull trout have repeatedly been associated with the coldest stream reaches within basins. The lower limits of many strong bull trout distributions mapped by Lee et al. (1997) correspond to a mean annual air temperature of about 4°C (ranging from 3 to 6°C) and should equate to ground water temperatures of about 5 to 10°C (Meisner 1990). Water temperature can be strongly influenced by land management (Henjum et al. 1994).

Stream channel equilibrium (stability) is the balance between sediment yield, water yield, and channel morphology, which exists within a stream system. Studies indicate that shifts away from channel equilibrium can result in negative changes in the structure and function of stream ecosystems (Bilby and Likens 1980, Schlosser 1982) and their dependent fish populations. Bisson and Sedell (1982) reported that where stream channels became destabilized, riffles elongated and in many cases extended through former pool locations resulting in loss of pool volume. They suggested that declines in older fish might be the result of their dependency upon

deeper water habitats. The persistence of bull trout over time can best be provided by maintaining lateral and instream habitat complexity in association with channel stability (Karr and Freemark 1983, Karr and Dudley 1981, Gorman and Karr 1978).

In a status review of bull trout on the Idaho Panhandle National Forests, stocks from the Kootenai River watershed were considered to be at moderate risk of extinction (Cross 1992). Genetic analysis has shown that bull trout within many sub-basins of northern Idaho may be unique stocks (B. Rieman, Forest Service Research, personal communication), but they are closely linked to the upper Columbia River clad - one of three major groupings of bull trout throughout the Columbia and Klamath River drainages (Williams, unpublished).

Of the streams listed within Table 3-12, Long Canyon, Trout, and Myrtle Creeks are likely the most important to species persistence for bull trout within the cumulative effects areas because they are the only streams they currently inhabit, principally below the falls barriers on both streams. These large systems have fair habitat conditions and connectivity to Kootenai River is especially important to fluvial bull trout. However, none of the drainages within the project area are classified as priority bull trout watersheds or listed as proposed critical habitat.

3) Westslope Cutthroat Trout

Westslope cutthroat trout are listed as "sensitive" by Region 1 of the USDA Forest Service and are listed as "species of special concern" by the State of Idaho. In addition, the U.S. Fish and Wildlife Service (USFWS) lists westslope cutthroat trout as a "Species of Concern" with respect to section 7(c) of the 1973 Endangered Species Act (ESA) (10/28/99 letter, FWS 1-9-99-SP-483) and is under review for listing under the ESA.

Their preferred habitat is cold, clear streams with rocky, silt-free riffles for spawning and slow, deep pools for feeding, resting, and over-wintering (Reel 1989). Pools are a particularly important habitat component as cutthroat trout occupy pool habitat more than 70% of the time (Mesa 1991). Other key features of westslope cutthroat habitat are large woody debris (LWD) for persistent cover and habitat diversity as well as small headwater streams for spawning and early life-stage rearing.

Resident life history strategies of westslope cutthroat trout are currently present in watersheds within the project area (Table 3-12). Resident populations remain in river tributaries throughout their life. Certain life histories (i.e. fluvial and adfluvial fish) use river tributaries for early rearing and spring spawning as adults but typically out-migrate to river (fluvial) or lake (adfluvial) habitat as they mature. In the fall, fish that have not previously returned to river and lake areas migrate to deeper water where they congregate and over-winter (Bjornn 1975). Streams within the project area may have historically been utilized by westslope cutthroat trout representing all life history strategies during various phases of their life cycle; however, currently mostly resident fish exist.

A population status review of westslope cutthroat trout in Idaho has determined that populations in northern Idaho have declined over their historic distribution with viable populations existing in only 36% of the original Idaho range. The primary cause of the decline was found to be habitat degradation (Rieman and Apperson 1989).

Westslope cutthroat trout have been seriously affected by the presence of introduced eastern brook trout. Eastern brook trout out-compete westslope cutthroat trout in areas where habitat is degraded. Stocking data (IDF&G records; district files) indicates that eastern brook trout have been introduced into the lakes and streams within the project area. The associated habitat degradation may have accelerated the decline of potential westslope cutthroat populations in the watershed. The streams in the project area that are known to contain westslope cutthroat trout are Parker, Trout, Ball, Burton, and Myrtle; and possibly Long Canyon and Farnham (Table 3-12). All stream are known to contain or likely contain eastern brook trout (Table 3-12). Consequently, within the cumulative effects areas, several streams are likely to be important to species persistence for westslope cutthroat trout. In addition to these streams, the connectivity between stream habitat and Kootenai River habitat is extremely important to westslope cutthroat trout habitat exhibiting a fluvial life history. However, some creeks have natural and man caused migration barriers that would limit connectivity.

4) Burbot

Burbot are listed as sensitive by the Regional Forester and are considered a species of concern by the State of Idaho and the U. S. Fish and Wildlife Service (FWS 1-9-03-SP-002, October 2, 2002). They prefer lakes or large rivers and in Idaho are found only in the Kootenai River system (Simpson and Wallace 1982). Spawning takes place in the winter and may occur in shallower waters of rivers and in small tributary streams, as well as in rivers in deep water under the ice (Simpson and Wallace 1982; Scott and Crossman 1973). Numbers of burbot have declined since 1965 in the Kootenai system. However, not documented, it is proposed that burbot historically spawned in the lower reaches of Myrtle Creek within the cumulative effects analysis areas (V. Paragamian, personal communication).

5) Torrent Sculpin

Torrent Sculpin were added to the Idaho Panhandle NF's sensitive species list March 12, 1999. This species is known to inhabit the Kootenai River Basin, but data on distribution by streams is limited (Simpson and Wallace 1982; Scott and Crossman 1973). They prefer riffle habitat in medium to wide streams and rivers (Markle et al. 1996). However, large adults (>150 mm) are found in pools. Spawning usually occurs in May and June and occurs in riffles with moderate to swift flows. Similar to westslope cutthroat and bull trout, the torrent sculpin is also a cold-water species and consequently its range overlaps with both these species. Because this species primarily inhabits large streams, it would only be affected by this project if the magnitude of the effects altered habitat conditions in the larger basins (e.g. Myrtle and Snow Creeks). Because this is a cold water species, possible effects on this species will be covered by analyzing effects on the cold water MIS (management indicator species).

Fisheries Habitat Condition and Connectivity

Natural events and processes (e.g., historic fires) and human activities (e.g., fire suppression and past logging) have influenced the environmental conditions in the cumulative effects area. Effects of natural disturbances have interacted with other land-evolving processes to form the basic character of watersheds and the dependent stream resources. Due to variability in location, frequency, intensity, and ultimately, the effects of natural processes on the physical

environment, dynamic landscapes with diverse conditions are formed at various spatial scales. Biological communities including native fish populations led to development of functional ecosystems that are inherently resilient to effects from natural disturbance regimes representing pulse-type disturbance (Reeves et al. 1995). Pulse disturbances influence the natural range of environmental conditions that are expected for ecosystems functioning at broad geographic scales but typically allow systems to begin recovering to pre-disturbance conditions soon after the disturbance.

Natural disturbance regimes (e.g. flood, wildfire, etc) and their associated properties (e.g. sediment yield, water yield, and other influences on aquatic habitat) have been altered in the cumulative effects area by human activity. Land use activities that have modified natural disturbance characteristics include logging and fire suppression. Many of these human influences are considered press-type disturbances that continue to affect the condition and trend of fisheries resources long after the initial disturbance. Press disturbance differs from pulse disturbance in several aspects, but generally press disturbance is persistent in ecosystems and impairs the ability for ecosystems to recover to pre-disturbance conditions (Reeves et al. 1995). Within the cumulative effects area, the recovery process from pulse disturbance has been hindered by the presence of various press disturbances. The disturbance history has played a large role in determining habitat conditions in fish-bearing streams.

G. Inventoried Roadless Area

1) Introduction

In 1979, the Roadless Area Review and Evaluation (RARE II) inventoried all lands exhibiting wilderness characteristics that could be considered for inclusion in the National Wilderness Preservation System. In 1983, revisions of the National Forest Management Act regulations led the IPNF to update the inventory of roadless areas on the Forest. This updated inventory was used to identify the areas to be evaluated for potential wilderness designation in the Forest planning process. Evaluation of the roadless areas is contained in an Addendum to Appendix C of the Forest Plan (1987). The discussion for the Selkirk Roadless Area (01125) is contained on pages C-32 through C-34 of that document.

2) Forest Plan Direction

The Forest Plan analysis describes each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative. As a result of that analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System (Forest Plan MA11), and others were assigned various non-wilderness prescriptions.

The IPNF Forest Plan states that roadless areas will be managed based on the direction and goals established for the respective management area within which they are located (Forest Plan, p. II-4). Forest Plan Management Areas (MA) establish Forest-wide multiple use goals and standards for the Whitebark Pine project area as described in Chapter 1 of the EA.

A portion of the Selkirk Roadless Area was recommended for inclusion in the Wilderness Preservation System and was given a proposed wilderness status, indicated as Management Area 11 (MA11). Another large part of this roadless area, adjacent to the proposed wilderness parcel, is managed as semi-primitive recreation - MA10. The other primary management areas within this roadless area are grizzly bear recovery areas with timber harvest, MA2; caribou recovery areas with timber harvest, MA7; and areas not generally suitable for timber production, MA9. More detailed descriptions of these management areas, along with a location map, are located in Chapter 1.

3) Methodology

Existing information in several previous analyses, including the Myrtle Cascade FEIS, the Smith Helicopter EA, the Forest Plan and the Trout Creek Project EA was utilized to determine the existing condition of the roadless resource.

4) Existing Condition

The Selkirk Roadless Area (01125) encompasses about 102,000 acres and covers a large percentage of the assessment area. It includes all of Long Canyon, Parker, and Fisher Creeks and portions of Farnham, Trout, Ball, Burton, Cascade, Myrtle, and Smith Creeks.

This roadless area reaches from the Kootenai River Valley, at less than 2000 feet in elevation, to the top of the Selkirk Crest, with elevations over 7700 feet. The terrain is very rugged with several high mountain peaks and small alpine lakes. It contains a wide range of vegetation types including dry ponderosa pine types, moist cedar and hemlock types, and high elevation spruce and fir types.

Evidence of past human activity is confined to trails, remains of fire lookout towers, skeletons of cabins, a few mine tunnels, and waste dumps. The northern portion, within the Long Canyon, Parker, and Fisher Creek drainages provides for a typical wilderness setting. Other portions, primarily in the southern end, consist of long, narrow fingers of roadless areas where visitors can observe and hear the sights and sounds of nearby activities.

The principle attraction of this roadless area is backcountry recreation -- for its high elevation scenic qualities and alpine lakes. Access to the roadless area is generally easily obtained from several roads and trails leading into the mountain range.

Additional existing condition information about the drainages within this roadless area is located in the “Recreation Opportunities, Proposed Wilderness Areas, and Associated Visual Quality” and the “Forest Composition And Structure” discussions located in this chapter.

a) Natural Integrity and Appearance

Natural integrity is the extent to which long-term ecological processes are intact and operating. Impacts to natural integrity are measured by the presence and magnitude of human-induced change to an area. Such impacts include physical developments (such as roads, fences, and cabins), recreation developments, domestic livestock grazing, and mineral developments.

Apparent naturalness (appearance) means that the environment looks natural to most people using the area. Even though some of the long-term ecological processes of an area may have been interrupted, the landscape of the area generally appears to be affected by the forces of nature. If the landscape has been modified by human activity, the evidence is not obvious to the casual observer, or it is disappearing due to natural processes.

The Selkirk Roadless Area has retained a high degree of natural integrity and apparent naturalness, with little evidence of human impacts. Some localized impacts are noticeable. Recreation activities, including trails, are the most prominent disturbances found throughout the area.

b) Opportunities for Solitude and Remoteness

Solitude is a personal, subjective value defined as isolation from the sights, sounds, and presence of others, and human developments. Solitude can be impacted by numbers of people and parties encountered on a trail or in a camping area, human-generated noise, or improved access. Remoteness is a perceived condition of being secluded, inaccessible, and out-of-the-way. The physical factors that can create remote settings include topography, vegetative screening, and distance from human impacts such as roads and logging operations.

The Selkirk Roadless Area provides many opportunities for visitors to experience the sense of solitude and remoteness.

c) Primitive Recreation Opportunities

A primitive recreation experience includes the opportunity to experience solitude, a sense of remoteness, closeness to nature, serenity, and spirit of adventure in an environment that offers a high degree of challenge and risk. Impacts related to primitive recreation experiences are usually expressed in changes to the physical setting, activities occurring in the area, and changes to the social experiences of others.

The Selkirk Roadless Area offers high quality primitive recreational experiences. The combination of clear streams, small high mountain lakes, alpine vegetation, and rugged peaks provide outstanding recreational settings for hiking, backpacking, hunting, fishing, picture taking, berry picking, nature appreciation, and others.

d) Unique Features

Unique features are those special geological, biological, ecological, cultural, or scenic features that may be located in the area.

This roadless area contains glaciated peaks, cirques and cirque lakes not available in the more uniform landscape of the nearby lower elevations. As described in the recreation section, the Selkirk Roadless Area also contains numerous manmade features, including trails, old fire lookouts, and historic cabins.

e) Manageability and Boundaries

This element relates to the ability of the Forest Service to manage the area to meet size criteria (5,000 acres or larger) and the six elements discussed above. As mentioned previously this roadless area encompasses about 102,000 acres. Changes in the shape of an area influence how it can be managed. The location of other proposed projects outside the area are also factors to be considered.

The majority of the Selkirk Roadless Area has excellent manageability characteristics. The area is very large, including three entire drainages and several ridge top areas associated with other drainages.

H. Unroaded Areas

1) Introduction

The Whitebark Pine project boundary includes large portions of Selkirk Roadless Area #125 and Kootenai Peak Roadless Area #126; however proposed treatment areas are located only within the Selkirk Roadless Area. Relatively small portions of treatment units identified in Alternative 2 as Myrtle Peak and Myrtle Ridge extend out of the Selkirk Roadless Area in the headwaters of Jim Creek and the headwaters of an unnamed tributary, both within the Myrtle Creek drainage. (project file Unroaded map) These treatment units are not included in either Alternative 3 or 4.

The Selkirk Roadless Area covers approximately 109,375 acres; Kootenai Peak covers about 5974 acres. The two areas follow the north and side sides, respectively, of the Myrtle Creek Road #633 for about 1.7 miles in sections 17 and 18, T62N, R1W, Boise Meridian. The center of the Selkirk area lies about 16 miles northwest of Bonners Ferry; the center of Kootenai Peak is about 7 miles west of Bonners Ferry.

2) Forest Plan Direction

The IPNF Forest Plan states that roadless areas will be managed based on the direction and goals established for the respective management area within which they are located (Forest Plan, p. II-4). For unroaded areas outside designated Roadless Areas, Forest Plan Management Area designations describe direction for management of the resources.

The previous section of the EA discussed the Roadless Area resources. More information is contained in the Recreation report (project file); the EA contains specific descriptions and discussions of the management area designations, roadless area/proposed wilderness characteristics (MA11), and the Recreation Opportunity Spectrum associated with this project.

The portions of treatment units outside the Selkirk Roadless Area are discussed below. As stated in the introduction, they are included in Alternative 2; but are not part of either Alternative 3 or 4. Details of their locations are shown in Chapter 2 of the EA.

3) Methodology

Potential effects to unroaded areas were evaluated by using the same characteristics analyzed for the Roadless Area (a through e above), plus the Forest Plan MA designations and the Recreation Opportunity Spectrum for the area.

4) Existing Condition

In the Myrtle Creek drainage, the land outside the roadless area is a checkerboard of National Forest System Lands and timber industry lands owned by Forest Capital Partners, LLC. The area has been developed through road construction and timber harvest. Chapter 3 of the EA discusses development within the watershed. The Unroaded map in Chapter 4 displays the Alternative 2 treatment units and the current condition of related resources in the watershed.

The unroaded lands would generally be described as narrow fingers, or strips, between the roadless area boundary and forest system roads as well as roads on private land. The fingers vary in width from less than 1/8-mile near Slide Creek, Cooks Lake and north of Peak Creek; to about 1.1 miles wide at Toot Creek. The roadless area boundary actually follows the northern edge of the Myrtle Creek Road #633 for a distance of about 1.7 miles, as described in the Introduction. It also follows the western edge of Road #2405 for about 0.8-mile in the Mack Creek sub-drainage.

Myrtle Peak Treatment Area
Total size of this treatment area is approximately 639 acres; roughly 10 acres in the headwaters of Jim Creek (generally described as a portion of N-1/2 NE-1/4 NE-1/4, Section 8, T62N, R2W) fall outside the boundary of the Selkirk Roadless Area. This small portion is in the Recreation Opportunity Spectrum of Semi Primitive (non-motorized). The closest road, #2406 in Section 9, is about 0.3 miles from the treatment area. Section 9 is industrial timber lands managed by Forest Capital Partners, LLC. At the closest point, the treatment area is about 1/8-mile from the industrial lands.

Myrtle Ridge Treatment Area
Total size of this treatment area is approximately 490 acres; it appears that roughly 80 acres in the headwaters of an unnamed tributary to Myrtle Creek (generally described as a portion centered in the NE-1/4 SW-1/4, Section 2, T62N, R2W) fall outside the boundary of the Selkirk Roadless Area. This small portion is in the Recreation Opportunity Spectrum of Semi Primitive (non-motorized). The closest roads are two spurs of Road #2405 in Section 11, about 0.3 miles from the nearest piece of the treatment area. Section 11 is industrial timber lands managed by Forest Capital Partners, LLC. At the closest point, the treatment area is less than 1/4-mile from the industrial lands.

Chapter 4 Environmental Consequences

4.1 Introduction

This chapter describes the probable environmental consequences of implementing Alternative 1, 2, 3, or 4. It forms the scientific and analytical basis for comparing these alternatives. Impacts to the resources are directly linked to the alternative driving issues listed in Chapter 2. Both positive and negative effects are considered. The environmental consequences that relate to the other resource concerns and public issues mentioned in Chapter 2 are discussed in Appendix A.

4.2 Evaluation of Alternatives

The effects of implementing the various alternatives, discussed below, are organized by alternative driving issues: A) Forest Composition and Structure, B) Recreation Opportunities, Proposed Wilderness Areas, and Associated Visual Quality, C) Wildlife Habitat, D) Water Resources and Aquatics Habitat, E) Roadless Area, and F) Unroaded Area.

4.3 Forest Composition and Structure

A. Methodology

Existing conditions of the forest vegetation and fire disturbances in the Whitebark Pine project area are described in the Affected Environment in Chapter 3. They provide a baseline of conditions to compare differences in environmental effects between alternatives.

Direct and indirect effects to forest structure and composition were measured by analyzing changes to species composition, stand structure, and pattern; and by the amount of area treated. This was accomplished by information gathered from the district database, aerial photos, maps, field reconnaissance, stand examinations, historic records, and the Scientific Assessment for the Interior Columbia Basin Ecosystem Management Project.

The direct and indirect effects of the prescribed burning on the reestablishment of the whitebark pine cover type were measured by estimating the number of acres treated. The BEHAVE model used to determine the maximum burn area is an interactive computer program designed to predict fire behavior characteristics for various fuel types. It is composed of simulation models developed for fire and associated fuel and environmental parameters. It has evolved over several years in conjunction with materials developed for training Fire Behavior analysts at the National Advanced Resource Technology Center in Marana, Arizona.

B. Direct and Indirect Effects

B-1. Effects Common to All Alternatives

Research has documented the rapid decline of whitebark pine throughout much of the western United States due primarily to white pine blister rust, fire suppression and forest succession, and mountain pine beetles (Kegley et al 2001). The whitebark pine stands in the project area are successional species that are subject to replacement by subalpine fir. They depend on periodic fire for renewal (Tomback et al 2001). Fire disturbance, through both small and large scale fires, can be expected to eventually change stand structures in this area, but the timing of these events is not predictable. These events would create suitable areas for natural regeneration of new whitebark pine seedlings. The success of the regeneration would depend on proximity to the nearest viable whitebark pine population, the size of the burned areas, and the abilities of the Clark's nutcracker birds.

Throughout the project area, there are stands with whitebark pine that are not under consideration for treatment in any of the alternatives. Many of these trees would continue to be infected with the blister rust fungus and attacked by mountain pine beetles. Mortality of many of these individuals would continue to occur.

Fire suppression activities would continue, since there is no Fire Management Plan in effect for the project area.

(Priority treatment areas: Trout/Fisher/Ball Creeks and Parker/Long Canyon/Cutoff Peak areas. From project file document Field Notes #5 - Whitebark Pine Regeneration Field Review 1998)

Alternative 1 - No Action

With the implementation of this alternative, there would be no change from the current management direction or intensity. The slashing and prescribed burning, or whitebark pine release cutting treatments would not be initiated at this time.

The mortality in those portions of the range where blister rust is highest, most or all of the whitebark pine regeneration may become infected, which means that as older trees die, few to no young trees will take their place. The genetic implications of failing to take action are therefore serious (Tomback et al 2001). Continued fire suppression, along with no use of prescribed fire, would further trend the vegetation patterns away from historical conditions. The seedling and sapling-sized whitebark pines, through succession, would be replaced by the more shade-tolerant sub-alpine fir and spruce (Reynolds 1990, Greater Yellowstone Coordination Committee 2001, Tomback et al 2001). Fire exclusion would also decrease the number of openings suitable for Clark's nutcracker to cache seeds and promote whitebark pine regeneration (Greater Yellowstone Coordination Committee, 2001). The subalpine zone forests would lose ecological and structural diversity, leading to stands that would be more vulnerable to large, severe, stand-replacing fires as well as insect and disease epidemics (Tomback et al 2001).

At the Whitebark Pine Committee Meeting of The Greater Yellowstone Coordinating Committee (GYCC) in November 2001, the group concluded that an active approach must be taken to conserve whitebark pine. The leave-alone policy would continue this species down the path of functional extinction over more and more of its range (GYCC 2001).

Alternatives 2, 3, and 4

As described and displayed in Chapter 2, two basic treatments would be employed with the implementation of Alternative 2 or 4. They include a combination of slashing and prescribed burning or a whitebark pine release treatment. Alternatives 2 and 3 would include both of these treatments as well as a burn only treatment for certain areas.

The **slashing and prescribed burning** would be accomplished in stands where whitebark pine is no longer a major component, but where historically it was the dominant species. The slashing would be used to provide an adequate fuel bed for the prescribed burning that would follow. The slash would be considered a Fire Behavior Fuel Model 11, as described in the General Technical Report INT-122 Aids to Determining Fuel Models For Estimating Fire Behavior. Fuel Model 11 is categorized as a light logging slash fuel model.

The amount and distribution of slashing would be quite variable, depending on site conditions. An estimated 10 to 15% of the small diameter submerchantable trees, distributed evenly across the proposed burn areas, would be cut. The creation of this scattered fuel bed would generate a layer of fuels drier than those in the surrounding forested areas. This includes the cured out needles, twigs, and small trunks of the slashed trees in addition to the existing down fuels. The existing down fuels would include grass, brush, old cones, sticks, downed trees, and other similar combustible items.

Silvicultural Terms

Slashing - The cutting of non-merchantable, undesirable, suppressed understory trees.

Prescribed Burning - Intentional use of fire under specified conditions to achieve specific management objectives.

Dominant Species - Trees with crowns extending above the general level of the main canopy.

Whitebark Pine Release - The cutting of brush, subalpine fir, and other tree species to allow for the release of the whitebark pine seedlings and saplings.

Site Preparation - A hand or mechanized manipulation of a site to enhance the success of regeneration.

The partial slashing would let increased solar radiation reach the ground, thus allowing for additional drying of both the slashed and existing exposed ground fuels. Creating conditions drier than the surrounding forest would give the prescribed burn manager a larger window of opportunity and would allow for a successful burn in cooler, moister conditions than without this manmade fuel bed. In short, the treated areas can be burned successfully under low to moderate wildfire hazard conditions (Tomback et al 2001) that would allow for good ignition and burning, while the untreated areas would be moister and not as combustible.

The results from a similar project on the Bitterroot National Forest, the Smith Creek burn, showed that areas with a slash layer burned better, creating more spots for whitebark pine seedling establishment, than areas burned without a slash layer (Tomback et al 2001). The prescribed fire burned about 52% of the area in the untreated stands; with a more continuous slash bed in the treated stands, the prescribed fire burned 80% of the area (Tomback et al

2001). This type of response was verified by one of the district's fire behavior analysts through various analysis runs using the BEHAVE computer model (refer to Fire Behavior Outputs Report in the project file).

The results in the Fire Behavior Outputs Report, were determined through use of the BEHAVE computer model. The model was used to determine three features of the various planned prescribed burns throughout the project area: fire intensities, flame lengths, and the backing rates of spread. This information was used to estimate the effectiveness of the pretreatment activities and to approximate how far the prescribed burns would potentially burn outside of the treated areas, without the use of manmade firelines.

The flanks of the proposed treatment areas are situated along natural fuel breaks, primarily rock outcrops, which would stop the advance of the burns outside of the planned ignition areas. The upper boundaries are located mostly along rocky ridges, adjoining moister, northern aspects, which would also stop the advance of the burns. The lower burn boundaries are the only ones with any real potential for fire movement since they are generally located along vegetation breaks, which would allow for backing fires only.

These backing fires would burn into stands classified as Fire Behavior Fuel Models 8 and 10 (General Technical Report INT-122, the Aids to Determining Fuel Models For Estimating Fire Behavior). Fuel Model 8, in the timber group, depicts stands with closed canopies, compact litter layers, and occasional concentrations of heavy fuel. Fuel Model 10, also in the timber group, has heavier quantities of downed fuels than FM8.

The conclusion from this analysis was that the uncontained lower edge of the prescribed burns would advance very slowly down the slope, with primarily smoldering, creeping hot spots. The worst-case scenario would allow for spread rates up to 66 feet per hour with low intensities and only two-foot flame lengths during the peak burn time, typically between 1:00 and 4:00 pm. The chance for spotting would be very low due to the unreceptive, unslashed timber stands or already burned upper slopes, in conjunction with the high relative humidity and low temperatures that typically occur during late summer and early fall in Northern Idaho at these upper elevations (project file documents Fuels and Fire #4, #5, #6). Through this process additional acres that could burn outside of the pretreated areas were determined. The creeping of the fire outside of the treated slashed areas is expected and acceptable from a fire control aspect. The additional acres were identified as secondary burn areas and their potential effects were analyzed for each resource. (See Chapter 2 and the effects analysis portions of Chapter 4 for more information.)

The slash and burn treatment would provide the site preparation necessary for either natural planting of the whitebark pine seeds through the activities of the Clark's nutcracker or artificial planting of nursery grown stock.

Table 4-1 displays the outputs from the various BEHAVE model runs. It compares the results of the predicted backing fires in Fuel Models 8 and 10 to the prescribed burn in the Fuel Model 11. Rate of spread, fireline intensity, and flame length were compared. As the table shows, the predicted fire behavior of the backing fires would be much cooler and would travel much slower than the prediction of fire behavior in the slashed (FM11), proposed treatment areas.

Table 4-1. BEHAVE Model Outputs**

Fuel Model	Rate of Spread (chains/hour)	Fireline Intensity (BTU/ft/sec)	Flame Length (feet)
8*	0	1	0.3
10*	1	25	2
11**	2 to 14	32 to 185	2 to 12

* These numbers are representative of a backing fire in these fuel models because that is the only direction the fire would be allowed to burn, since the flanks and the tops are located on natural fuel breaks.

**The range of outputs was determined by using a range of eye level wind speeds from 2 to 12 mph.

The second treatment method is **whitebark pine release cutting** in stands that contain adequate numbers of whitebark pine that are getting excessive competition from other species. All other tree species or brush that would be in direct competition with the whitebark pine seedlings and saplings would be cut to make whitebark pine the dominant species. This treatment mimics the effects of low intensity and mixed severity fires that would have killed the competing species that are less fire resistant than the whitebark pine (Tomback et al 2001). These treatments would occur between roughly 6000 and 7500 feet in elevation. Because of the small diameters of the material to be cut and the heavy snow loads that occur at these high elevations, the slash generated from the thinning operation would decompose fairly quickly. Smith Creek Snow Course Measurements show the 1971 to 2000 average as 138 inches of snow during the April 1st annual measurements (Natural Resources Conservation Service website at www.nrcs.usda.gov/snowcourse/table/history/Idaho/16a01.txt).

The third treatment, **burning only**, in Alternatives 2 and 3, would be conducted in a limited number of stands in proposed wilderness. This is not the preferred method of treatment. To limit the number of secondary burn acres the stands would need to be burned under fairly moist conditions, similar to those required in the forested areas that lie adjacent to the slash and burn treatment areas. However, since no slashing would be done to dry out the proposed burn sites a more intense ignition system, such as helitorching, would be required. Heli-torching utilizes a thickened petroleum product that is dispensed from a helicopter. It adheres to the fuels allowing for longer contact than other typical ignition systems. Since a drier fuel bed would not be created within the burn boundaries, the objectives would only be partially met, if at all.

Table 4-2, displays the number of acres treated within each alternative by the three methods. The primary difference between the three action alternatives is the intensity at which the various treatments would be utilized.

The total number of acres treated was used to determine which alternative would best meet the project's purpose and needs, as well as to compare alternatives with each other. The amount of acres that are burned, is directly related to the amount of land suitable and with increased potential for reforestation by the Clark's Nutcracker, as well as the number of acres where the natural role of fire would be restored. Likewise, the more acres of established whitebark pine seedlings and saplings that are released, the more acres that would be dominated by whitebark pine.

Table 4-2. Acres of Treatment under Each Alternative

Proposed Treatment	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Burn Only	0	278	213	0
Slash and Burn Acres	0	4,527	1,045	1,045
Whitebark Pine Release Acres	0	739	388	388
Secondary Burn Acres	0	1,722	416	297
Total Acres	0	7,266	2,062	1,730

Comparison of Alternatives 2, 3, and 4:

Using these criteria, Alternative 2 would provide the greatest potential for whitebark pine regeneration and sapling release, treating a total of almost 7,300 acres, followed by Alternative 3 which would treat just over 2,000 acres, and finally by Alternative 4 which would treat just over 1,700 acres.

Currently, about 16% of the stands in the project area that are capable of supporting whitebark pine are dominated by whitebark pine. Figure 4-1, displays the current levels of whitebark pine cover type within the assessment area compared to the amount of whitebark pine cover type after treatment. Under Alternative 2 stands dominated by whitebark pine would increase to an estimated 54%, whereas Alternatives 2 and 3 would increase stands dominated by whitebark pine to 27% and 25% respectively.

Based on field surveys the Trout Creek, Fisher Creek, Ball Creek, and Long Canyon Creek (specifically Cutoff Peak area) areas have the highest potential to naturally regenerate substantial amounts of whitebark pine. As shown in Table 4-3, Alternative 2 would treat considerably more acres with high natural regeneration potential than Alternatives 2 and 3.

In summary, all action alternatives trend treated stands toward a long-term increase in whitebark pine populations, although Alternative 2 converts considerably more acres than Alternatives 2 and 3. As displayed in Table 4-2, the treatment methods used to restore whitebark pine vary with each alternative as well. However, all of the action alternatives provide much greater opportunity for restoration of whitebark pine than Alternative 1, no action.

Figure 4-1. Whitebark Pine Cover Type by Alternative

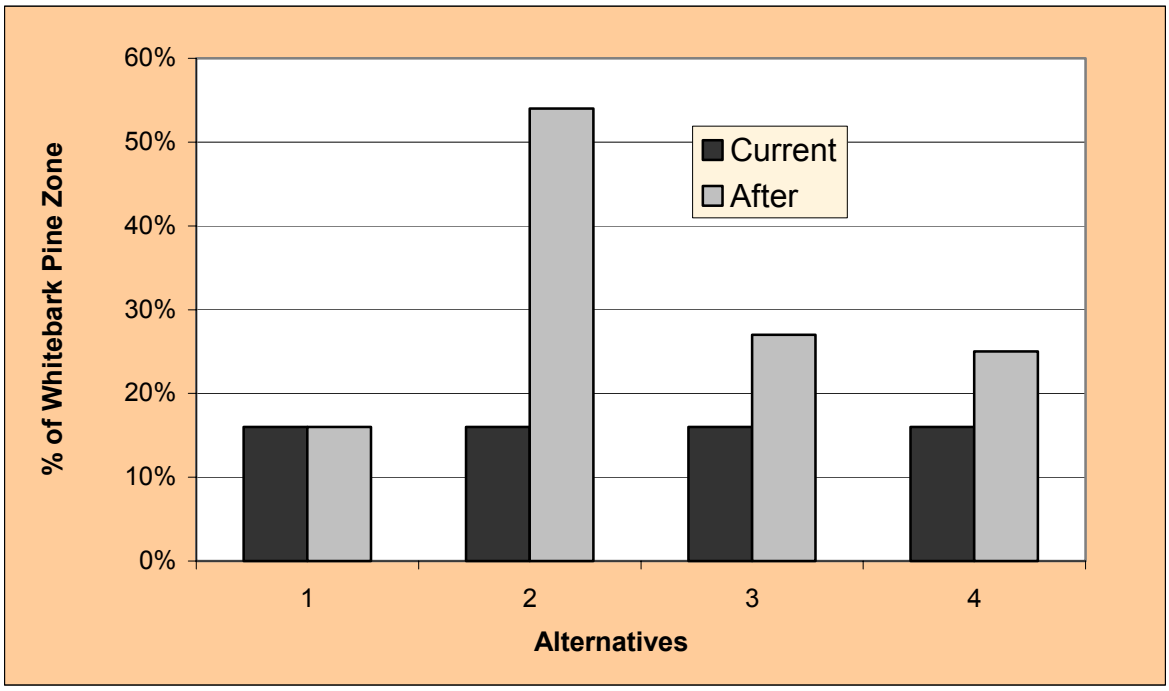


Table 4-3. Treated Acres that have High Potential for Natural Regeneration

Treatment Area	Alt 2	Alt 3	Alt 4
Trout Creek	1998	362	362
Ball Creek	945	494	494
Fisher Creek	324	324	324
Long Canyon Creek	445	143	143
Total Acres	3712	1323	1323

C. Cumulative Effects Analysis

A cumulative effects analysis includes disclosure of the potential additive effects of past, present, and reasonably foreseeable activities on federal and non-federal lands, combined with the effects of the proposed action. The cumulative effects analysis area boundary is defined as the area where the effects are no longer apparent. For this project the cumulative effects analysis boundary for forest composition and structure is the same as the assessment area boundary (see Figure 1-2 in Chapter 1).

The following activities are ongoing and reasonably foreseeable activities in the assessment area. They would occur with or without the implementation of any of the alternatives, including the no action alternative.

Firewood Gathering – Personal Use firewood gathering would occur within the assessment area, but would not occur in any of the proposed treatment areas. The cutting of firewood is only allowed along open roads. All of the proposed treatment areas are located near ridgetops away from any open roads and the slashing and burning or thinning are in the high elevation whitebark pine stands.

Personal Use firewood cutting would not lead to any additional direct, indirect, or cumulative effects.

Treatment of Noxious Weeds - Noxious weed treatment under the guidelines in the Noxious Weed Management Projects FEIS for the Bonners Ferry Ranger District, is done primarily along roadsides, but is also permitted along segments of specific trails and within some past harvest units. The list of treatment areas is contained within Appendix A of the Noxious Weed Management Projects FEIS; a copy is included in the project file. None of the noxious weed treatment areas are within the proposed whitebark pine treatment areas identified in any of the proposed action alternatives with this project.

This activity would not lead to any additional direct, indirect, or cumulative effects.

Routine Trail Maintenance - Routine trail maintenance is performed every year in various portions of the assessment area. This includes the clearing downed logs, repairing segments of trail tread, improving drainage structures, replacing timbers in bridges and corduroy, repairing signs, and similar tasks. The only potential impact between this activity and the implementation of the whitebark pine project would be minor work delays or additional coordination efforts between the trail and whitebark pine crews. This could include delays caused by access needs for the whitebark pine crews and extra coordination of work locations during the burning phase. These impacts, or inconveniences, would be minor, especially since most trail maintenance activities occur during the mid-summer months and the bulk of the whitebark pine work would likely occur in the late summer to early fall.

Trail maintenance and whitebark pine restoration activities would require coordination, but would not lead to any additional direct, indirect, or cumulative effects on the resources discussed in this EA. (See pages 4-45, 4-56, for discussion of effects on caribou and lynx habitats, page 4-65 for discussion of effects on grizzly bear habitat, page 4-78 for discussion of effects on aquatic resources, page 4-84 for discussion of potential effects on the Selkirk Roadless Area.)

Timber Stand Improvement - Several types of timber stand improvement activities associated with other previously implemented projects would occur throughout the assessment area. This work includes precommercial thinning (thinning of small diameter trees that do not have any commercial value), white pine pruning, and planting. Thinning in young, overstocked plantations reduces stocking levels to densities that improve continued tree growth. Pruning white pine saplings in existing plantations improves the opportunity for this species to resist blister rust infection and reach maturity. Planting would occur in past harvest units where artificial regeneration is prescribed.

All of these timber stand improvement activities are proposed within past harvest units. No whitebark pine treatment areas are located within past harvest units. This activity would not lead to any additional direct, indirect, or cumulative effects.

Myrtle Cascade FEIS Timber Sales - Big Mack, Mama Cascade, and Salt Lick timber sales, sold in fiscal year 2001 and located in the Myrtle or Cascade Creek watersheds, were analyzed in the Myrtle Cascade FEIS.

Alternatives 3 and 4, of the Whitebark Pine Restoration EA, do not include any treatments within the Myrtle or Cascade Creek drainages. Under either of these alternatives, there would be no direct, indirect or cumulative effects from these timber sales.

Alternative 2 includes several hundred acres of proposed treatment in these two drainages, but none are located near any of the existing harvest units. Based on past harvest units and old fires, some of the higher elevation cutting units from the Myrtle Cascade timber sales may create the site preparation necessary to allow for natural regeneration of whitebark pine seedlings through the seed caching activities of the Clark's nutcracker. Any site preparation and whitebark pine seed distribution would lead to additional beneficial indirect and cumulative effects.

Bonners Ferry Ranger District Small Sales EA - The Bonners Ferry Ranger District is currently developing an Environmental Assessment for small salvage opportunities across the district. The areas identified for potential salvage are primarily along open roads and within existing harvest units. The areas identified in the Whitebark Pine restoration project are near ridgetops, away from open roads, on sites that would not typically be identified as areas for timber harvest. Each of these proposed projects has a totally different purpose and need for entering stands within the assessment area, consequently each one has identified completely different parcels of land that need treatment. This activity would not lead to any additional direct, indirect, or cumulative effects.

Private Lands <u>within</u> the Assessment Area - The assessment area includes numerous parcels of privately owned lands. The large majority are industrial timber lands owned by a local sawmill for decades; but recently sold to Patriot Limited, an investment company, and now managed by Forest Capital, a land management group. Historically, this land has been managed using a variety of silvicultural prescriptions including shelterwood, seed tree, commercial thinning, salvage, and others. It is expected that these lands will continue to be managed as industrial forest lands; with continued timber harvest and follow-up stand treatments. The location of future harvest or the amount of timber that would be removed from these private industrial lands is not known, but some timber harvest is anticipated based on recent history.

Alternative 2:

The Cutoff Peak parcel is within 0.5 mile of private land in upper Smith Creek, the Long Canyon parcel is within 0.5 mile of private land in upper Long Canyon Creek, and the Myrtle Peak and Myrtle Ridge parcels are immediately adjacent to or very close to private lands within the Myrtle Creek drainage. Because of topography, prevailing winds, distance from private lands, and

results of the fire behavior analysis, the burns in upper Smith and Long Canyon Creeks would not likely impact the private lands.

However, portions of the treatment areas in Myrtle Creek lie directly along private land. Burning along private land boundaries is a common practice on the Bonners Ferry Ranger District and throughout the nation. To reduce the chance of a prescribed burn spreading onto private lands, the burns are conducted under strict guidelines that greatly reduce the risks. However, whenever fire is put onto the landscape, since the weather is never totally predictable, there is a slight chance of fire burning onto private lands in Myrtle Creek and potentially killing some trees on these lands. For this reason, returning fire into the ecosystem with the implementation of Alternative 2 would have a slight potential for indirect and cumulative effects on private lands.

Alternatives 3 and 4:

The Cutoff Peak treatment area, the only proposed treatment area near private lands, lies almost 0.5 mile to the east and north of two privately owned sections in upper Smith Creek. Based on the findings in the fire behavior analysis, prevailing wind patterns, the fact that the private lands are one-half mile downhill from the proposed burn area, and the successful burning record on the Bonners Ferry Ranger District over the past 30 years, the chance of the proposed burn escaping onto the private lands is minuscule. For these reasons, restoring the whitebark pine cover type and returning fire into the ecosystem with implementation of Alternative 3 or 4, is very unlikely to have any direct, indirect, or cumulative effects on the private lands within the assessment area.

Private Lands <u>Adjacent</u> to the Assessment Area - Private lands adjacent to the assessment area are located along the Kootenai River Valley and are held by a wide range of owners including individuals, state and federal governments, and corporations. Uses on these lands include farming, grazing, ranching, logging, US Fish & Wildlife Service wildlife refuge, residential, and recreational purposes. Current management practices on these lands are expected to continue.

The closest area proposed for a prescribed burn treatment is the Burton Peak parcel that is almost two miles away, with the majority of the treatment areas being several miles away. The chance of any of the proposed burns reaching this private land is extremely unlikely, based on the topography, the findings from the Fire Behavior Outputs Report, and the burning history on the district over the past 30 years.

For these reasons, restoring the whitebark pine cover type and returning fire into the ecosystem is extremely unlikely to have any direct, indirect, or cumulative effects on any private lands adjacent to the assessment area.

D. Consistency with the Forest Plan and Other Applicable Regulatory Direction

Forest Plan goals in relation to **vegetation and fire management** in the whitebark pine restoration project are as follows:

- provide for a diversity of plant and animal communities,
- manage the forest resources to protect against insect and disease damage, and

- provide efficient fire protection and fire use to help accomplish land management objectives.

The Forest Plan's Fire Management Action Plan standards (Forest Plan page II-38, standard 2) are as follows:

a. Management area standards defined for each Management Area (MA).
b. Human life and property will be protected.
c. Fire will be used to achieve management goals for the MA.
d. MA standards will be used in Escaped Fire Situation Analyses as a basis for establishing resource priorities and values. (These analyses are now referred to a Wild Fire Situation Analyses)
e. The appropriate suppression response for designated old-growth stands in all MAs, except in wilderness, will result in preventing the loss of old growth. Fire policy in relation to old growth within wilderness will be provided in specific management direction developed for each wilderness area.
f. Activity fuels will be treated to reduce their potential rate of spread and fire intensity so the planned initial attack organization can meet initial attack objectives.
g. Forest Fuel Management expenditure priorities are: 1) natural fuels that pose a threat to human life and property, 2) unfunded activity fuel projects, 3) areas where fuels/fire behavior is a threat to MA objectives.

Alternative 1 excludes fuel treatments; however, standards a, b, d, and e, which deal with fire suppression, would be adhered to. The other standards, specifically 2c, would not be met. This standard says that fire would be used to achieve management goals according to direction in management areas.

Alternatives 2, 3, and 4 propose some level of prescribed fire that would meet standard 2c, in addition to adhering to standards a, b, d, e and f.

There are no specific Forest Plan standards for **restoration of "non-commercial" forested lands**. However, timber standard number 2 (Forest Plan page II-32) does allow salvage of timber in stands that are substantially damaged by fire, windthrow, insect and disease attack, or other catastrophe, in all management areas except MAs 11 and 14. No salvage is proposed in any of the alternatives, but this standard demonstrates that the IPNF is concerned with catastrophic levels of insects and disease, which is present in all of the whitebark pine stands identified for treatment.

Alternative 1 would not help to reduce the insect and disease damage to the whitebark pine stands or help to restore any of this rapidly declining cover type.

Alternatives 2, 3, and 4 would help to return many acres of currently dysfunctional stands into young, healthy, stands of functioning whitebark pine.

4.4 Recreation Opportunities, Proposed Wilderness Areas, and Associated Visual Quality

A. Methodology

The Recreation Opportunity Spectrum (ROS), Scenery Management System (SMS), Trout Creek Recreation Project EA, the Forest Plan, and the Wilderness Act were used to determine the effects of the proposed treatments on recreation opportunities, proposed wilderness area, and visual quality.

B. Direct and Indirect Effects

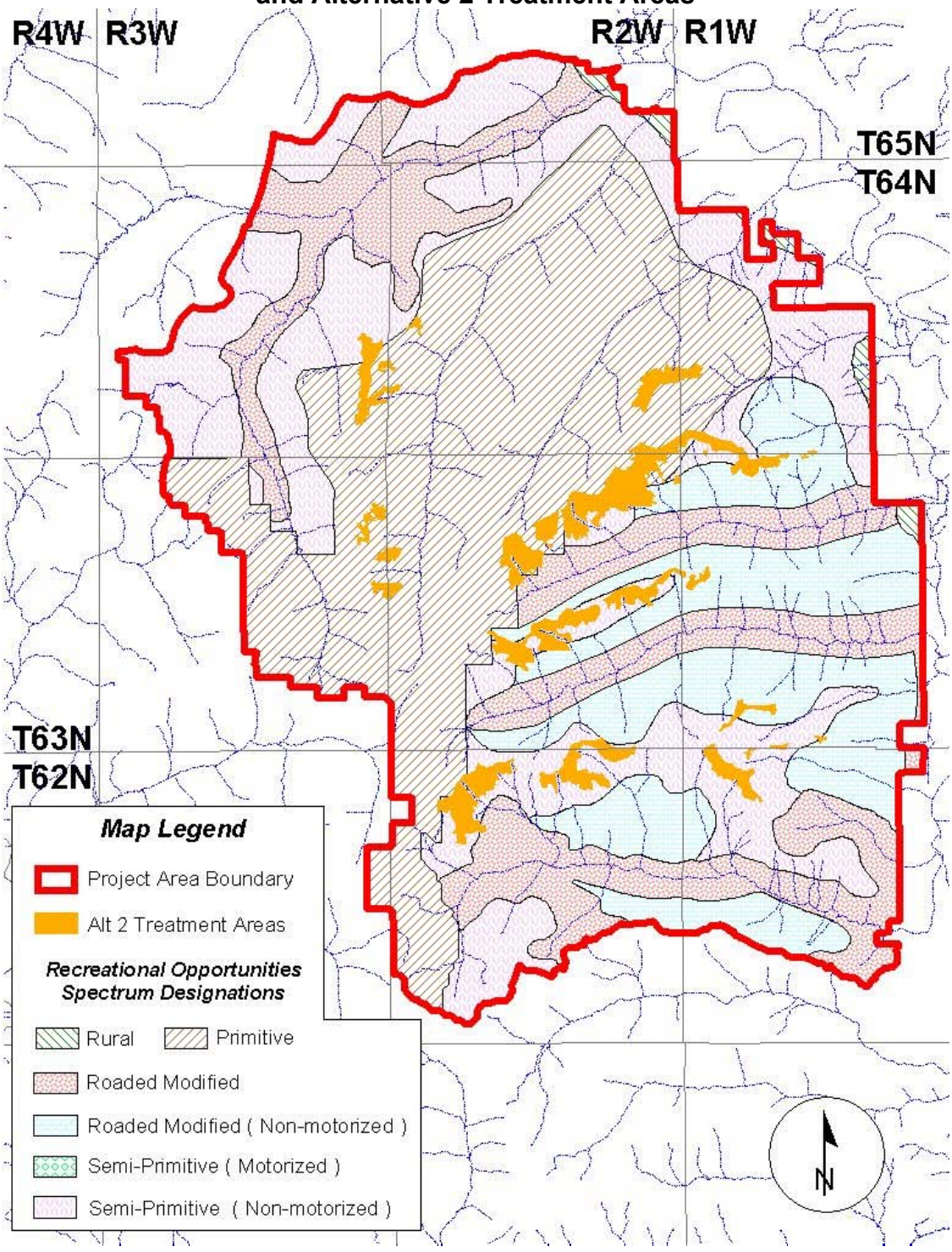
Chapter 2 contains maps of treatment areas for Alternatives 2, 3 and 4. The Management Area Map in Chapter 1 displays the areas in MA-10 Semi-Primitive Recreation and MA-11 Proposed Wilderness. To aid in the reader's understanding of potential effects to the recreation environment, Figure 4-2 displays Alternative 2 treatment areas and the locations of the various elements of the Summer Recreation Opportunity Spectrum.

B-1. Effects Common to Alternatives 2 and 3

Scientists are nearly unanimous in their assessment that whitebark pine ecosystems require immediate restoration activity to counteract the results of decades of fire exclusion and the introduction of white pine blister rust. There is a great deal of overlap between wilderness and whitebark ecosystems. However, protection of wilderness values and the use of management-ignited fire in wilderness and proposed wilderness is a matter of debate involving the scientific community and those who advocate strict adherence to provisions of the Wilderness Act.

Whitebark pine ecosystems within designated wilderness must be managed in accordance with section 2 (c) of the Wilderness Act, which defines wilderness in part as a place "untrammeled by man" and which "generally appears to have been affected by the forces of nature, with the imprint of man's work substantially unnoticeable." Complicating matters is the presence of a modified whitebark pine ecosystem in wilderness and proposed wilderness areas. The suppression of fires and presence of blister rust is trammeling because conditions are not the result of natural processes, but rather human intervention, although indirect. In the case of whitebark pine, such effects go far beyond the trees themselves and include loss of biodiversity. Essentially, these systems are currently unnatural ecologically. Conversely, restoration activities proposed under Alternatives 2 and 3 may trammel areas that have wilderness values in the short-term, although these activities would trend the whitebark pine ecosystems more toward a "natural" condition in the long-term. Yet, the question of what is "natural" is one that is function of social norms, preferences and ethical positions (Tomback et al 2001). Implementation of either Alternative 2 or 3 would certainly not answer the question

Figure 4-2 Recreation Opportunity Spectrum (Summer) Designation and Alternative 2 Treatment Areas



This map shows the maximum area that would be treated under any alternative, in relationship to the Summer ROS for the Whitebark Pine assessment area. None of the alternatives would result in changes to the Winter ROS for the area.

No formal wilderness designation has been made for lands in the project area, although the area contains over 18,000 acres of MA 11 (proposed wilderness) along the Selkirk Crest. Forest Plan direction is to retain characteristics that would allow those lands to be considered for future designation. MA11 allows for the use of prescribed fire when it would be beneficial and cost effective in achieving management area objectives. Forest Plan direction also allows fire to play a natural role in MA11. Insect and disease conditions are to be monitored and evaluated and, if conditions pose a significant threat to lands outside wilderness areas, control measures may be taken with biological control given priority.

The project area also contains over 28,000 acres of MA10 lands (semi-primitive recreation areas). Forest Plan direction provides for the use of integrated pest management to meet management area objectives for insects and diseases. Management of these areas also includes objectives for grizzly bear and woodland caribou habitat (Section C. Wildlife). Prescribed fire direction is the same as MA11. Confine, contain, and control strategies are designated for natural fires. These areas have primitive characteristics consistent with MA11 lands (existing and proposed wilderness). Even though they are located in MA10, the Cutoff Peak, Long Canyon, Fisher Peak, Fisher-Farnham, Trout Lake, Ball Lakes, and Myrtle Peak treatment areas have all been included in Wilderness proposals for more than 20 years. Public sensitivity to the wilderness debate in the Selkirks, both in favor and against designation, has been continuous and acute for all that time. Any activity in these lands would receive high profile attention.

B-2. Effects Common to All Action Alternatives

None of the currently active recreation special use permits would be affected by the whitebark pine restoration activities.

All restoration work would be compatible with the Memorandum of Understanding between the Idaho Department of Lands and the Forest Service.

Russell and Cutoff Peak cabins, both located near proposed treatment areas, will be protected. Because of the expected fire behavior and required protections for cultural resources, the chance of this damage is minimal.

Generally, roads and roadside recreational activities would be affected only by the fact that management activities, (slashing and burning) might be visible from a distance. During restoration work traffic may increase, but should not cause long-term delays or interruptions for recreational use.

Most of the treatments areas would be accessed using helicopters, even though some may be accessed using existing trails. If the Trout Creek trailhead is used, parking for recreational users could be limited. Use may exceed guidelines identified in the Trout Creek project. However, these activities will not likely impact parking unless the work is done prior to Labor Day.

“Bakers Camp” on the Smith Creek road, a popular dispersed camping site, would be a likely helibase for any alternative. It is very likely that campers would be displaced for the duration of the helicopter work for treatment areas west of Long Canyon Creek. (See Appendix C for estimates of crew production and time required to accomplish this work.) Although Bakers

Camp is unique in its size and flat landscape, there are smaller sites along the Smith Creek road that could accommodate campers.

The ROS social settings would change during project implementation. The use of chainsaws and helicopters, as well as the influx of crews for the concentrated time needed to slash and burn the treatment areas, is unusual for the backcountry areas involved. Due to the higher elevation of most treatment areas, the sounds of sawing and helicopter flights would carry beyond the specific treatment areas and would affect users over a larger space.

The near-range and mid-range recreational experience would be diminished for the length of the project (includes project preparation and work activities.) It may also include future monitoring and planting activities. The social settings would likely return to their original classifications after project work and monitoring is complete. The degree of social change would vary alternative to alternative.

The Physical ROS setting would vary alternative to alternative.

The winter recreational experience would be unaffected by all project work.

Due to the length of time for which the NEPA would be appropriate, as well as the uncertainty of funding, accurate analysis of the social impact is difficult. The implementation of any of the alternatives in the primitive lands, could last over a longer period than any comparable work in the past, such as trail reconstruction or wildfire suppression. Monitoring following the implementation of any of the action alternatives may include entomologist, ecologists, pathologists, botanists, university students, and others. These activities are not a part of the proposed action, thus were not analyzed in detail.

Based on historical activities, long-term impacts for these lands are those that exceed repeated short-term entry for more than three consecutive years.

Visual sensitivity for all action alternatives is high. Whether lands have been classified as visually sensitive or not, is not as important as the fact that the area of visual influence is broad. Each area of treatment can be viewed from sensitive and recreationally popular peaks and ridges. In the short-term, project areas would be blackened and visible from many vantage points. Greenup from small plants would start within the first year and the visual impact in the background and middle ground would decrease over time. In the long-term, from a distance, all action alternatives are compatible with scenery management direction. The resulting mosaics would be consistent with the line, form, and texture found in the Selkirk landscapes. User sensitivity and visual impacts in the foreground, from sawing and burning, would vary depending on the user and the area being treated. Stumps and downed trees would be apparent when traveling cross-country. Although burning would blacken the stumps and reduce the slash on the ground, it would be apparent to travelers that mechanical manipulation took place.

In areas where the whitebark pine release cutting occurs, the red color of the dead needles would dominate at first but would become less obvious within a season or two, as the needles drop off and the small branches become flattened by snow and decomposition. Cross-country travelers would encounter an unusual amount of downed trees in those areas; however, since

this treatment is focused on releasing existing seedling and sapling sized trees, the resulting slash is expected to be minimal and would not likely impede travel.

All action alternatives would affect system trails to some degree. It is conceivable that project workers would use the system trails or parts of trails to access restoration areas, even though the bulk of the access would be by helicopters. In some cases, system trails traverse treatment areas. Those trails, which would be affected commonly, are: Trails #202, #12, #14, #92, and #93.

Farnham Ridge Trail, #202, and Eneas Trail, #93, are unimproved trails and administrative use would not affect the recreation experience along these trails.

Parker Creek Trail, #14, is generally unimproved with low use. It would not be used to access any treatment area. Treatment areas are not visible from the trail, but sounds of work on any of the Fisher Peak, Farnham Ridge, or Fisher-Farnham areas could be audible. Due to the season of the proposed work and the low recreation use on this trail, the effect of the work would be negligible.

Trails #12 and #92 access the Russell Mountain and Russell Ridge treatment areas. They currently receive low recreation use. Additional administrative use would not adversely affect the social experience. The physical setting of both trails would be affected. Project impacts would be immediate and long lasting. The trails traverse several miles of treatment lands. From the trails, the post project experience would be consistent with what a recreational user might expect following a wildfire in a remote backcountry area, especially since the slashing activities would be visually screened from the trails. The south face of Russell ridge is strongly modified thereby reducing the sensitivity a cross-country traveler would have for blackened stumps. Stumps would be small in diameter and probably would not be very noticeable in this modified landscape after several years.

Due to the remoteness of many of the treatment areas, the work force would need to camp on site. The lasting physical affects of a crew, estimated at an average of ten people, camping in a high alpine environment could be substantial. Barren core areas, social trails, fire pits, latrines, and trash all have permanent affects to the land. The degree of effect would depend upon the sensitivity of the crews, the campsite placement, and the duration of the stay. The campsite placement and the length of stay would change alternative to alternative.

Safety issues concerning forest users are fundamental with each alternative. Trail or cross-country travel is the expected and normal method for public access to most of the lands within the treatment areas. Access to the analysis area is unlimited, with people following creeks for fishing, hiking open ridges, hunting on restricted roads, and camping in undeveloped, remote sites. The project area is renowned for its high probability of social isolation and the need for user self-reliance. It is unlikely that road signs or community service announcements would be adequate to reach recreationists using the analysis area.

No Action - Alternative 1

With the implementation of this alternative, there would be no change from the current management direction or intensity. The slashing and prescribed burning or whitebark pine

release cutting treatments would not be initiated at this time. Fire suppression activities would continue, since there is not a Fire Management Plan in effect for the project area.

Any changes to the recreation resource would be from natural causes, such as impacts from wildfires or windstorms and similar events.

Alternative 2

Issue #1 - Protect Wilderness Values

Even though the assessment area does not contain any designated wilderness, it does contain a large parcel of "proposed" wilderness, described as MA11 in the Forest Plan. According to the Plan, this land will be managed to protect its wilderness characteristics.

Overall, Alternative 2 proposes the most treatment for the restoration of whitebark pine of the three action alternatives. Within the proposed wilderness area it proposes treatment on over 600 acres with another almost 200 acres of possible secondary burn.

Issue #2 - Consistency with Guidelines Developed in the Trout Creek Project.

This discussion concerns the Cutoff Peak, Long Canyon, Trout Lake, Fisher Peak, Fisher-Farnham, and some of the Ball Lakes, Russell Peak, and Russell Ridge treatment areas.

All the lands in the Long Canyon and Fisher Peak treatments areas, most of the land in the Cutoff Peak treatment area, and some of the lands in Trout Lake, Fisher-Farnham, and Ball Lakes treatment areas are primitive in nature. Alternative 2 proposes treatment on 2,060 acres of primitive land.

The remaining lands are semi-primitive non-motorized, or roaded modified in nature.

Physical Remoteness and Evidence of Humans

In **Alternative 2**, the physical remoteness of primitive lands would be affected. Although no new roads or trails would be constructed, the potential for inadvertent development of social trails and campsites is high. In all primitive lands except the Long Canyon treatment area, camping would be necessary to accomplish preparation work. Campsites already identified under the Trout Creek project would not be adequate to serve as base camps for work crews. Crews need to be near project work areas to maximize their efficiency. Development of new campsites and the associated social trails that would inevitably occur is out of accordance with Class I, and Class II Primitive, as described in the Trout Creek Project. The effect of work camps and social trails would have to be considered long term in that the amount of time needed to accomplish the work, coupled with the amount of time needed to restore the campsites, would likely exceed ten years. The sense of remoteness would decrease proportionate to the increased number and size of campsites needed for project work.

In addition, existing helispots would not likely be adequate. Clearings large enough for safe helicopter operations would be a permanent change to the landscape.

Finally, due to the presence of work crews, and the sight and sounds of helicopters and chainsaws, the sense of remoteness would be disturbed for the duration of the work project. The noise disturbance would extend beyond the individual treatment areas. After project work, this portion of the remoteness factor would return to acceptable standards.

The physical remoteness of semi-primitive and roaded modified lands would remain generally unaffected by project work.

Social Setting - Solitude While Traveling and Camping

The social setting is determined by the evidence of humans, the degree of solitude while traveling, and the degree of solitude while camping. The Trout Creek Project provided guidelines for area use based upon historic use, with some opportunity for growth, and consistent with the grizzly bear guidelines. Use guidelines are defined in terms of Recreation Visitor Days per Recreation Opportunity Class. (Refer to the RVD chart, Table 4-4, located on the next page, and Appendix D, the ROS chart, located at the back of this document.)

Treatment area preparation activities would occur towards the end of peak recreation times, generally after Labor Day weekend. Burn activities would be done in the fall, after most of the recreation use has decreased. The actual number of recreational users affected by the work activities would likely be moderate. Encounters would be most common in the Trout Lake, and Fisher-Farnham areas. Although trail crews have camped in these areas in the past, (4 to 6 times over the past 20 years), this project would be a departure from past activities in that the amount of time crews need to accomplish the work, as well as the season in which the work is being done, and the physical expanse that the project encompasses is unprecedented.

In Class I and Class II Primitive lands, any encounter would be exceptionally unlikely; encountering a work crew would be extraordinary (Guidelines in Table 4-4 indicated less than 3 people per year in these areas.) However, such encounters would occur with the implementation of this alternative, and would exceed Trout Creek Project Recreation Visitor Day guidelines. In every treatment area, regardless of the Recreation Opportunity Classification, the project work alone creates more social impact than is consistent with the Trout Creek Project. Any additional recreation use would further amplify the social use contradiction. (Refer to Table 4-4, and the ROS Chart in Appendix D)

Table 4-4. Recreation Visitor Day Guidelines and Projections by Alternative

Treatment Area	ROS Class	Recreation Visitor Day Guidelines	Alt 2 Projected RVDs	Alt 3 Projected RVDs	Alt 4 Projected RVDs
Cutoff	SPNM PRIM	54 RVDs per week 2 weeks max 134	90 per week for 2-3 weeks	50-90 RVDs for 1 week	50-90 RVDs for 1 week
Long Canyon	PRIM	Less than 3 people per 3 years	No camping	No camping	Not included
Fisher Farnham	RMNM SPNM PRIM	65 RVDs per week 3 weeks max 142	90 per week for 6-11 weeks	Not included	Not included
Farnham	SPNM	65 RVDs per week	N/A	70-90 RVDs	70-90 RVDs

Treatment Area	ROS Class	Recreation Visitor Day Guidelines	Alt 2 Projected RVDs	Alt 3 Projected RVDs	Alt 4 Projected RVDs
Ridge	PRIM RMNM	3 weeks max 142		for 1-2 weeks	for 1-2 weeks
Big Fisher	SPNM PRIM	54 RVDs per week 2 weeks max 134	N/A	50-90 RVDs for 1-2 weeks	50-90 RVDs for 1-2 weeks
Ball Lakes Alt 2	RMNM SPNM PRIM	65 RVDs per week 3 weeks max 142	90 per week for 2-3 weeks	N/A	N/A
Ball Lakes Alt 3 & 4	SPNM PRIM	54 RVDs per week 2 weeks max 134	N/A	70-90 RVDs for 1-2 weeks	70-90 RVDs for 1-2 weeks
Russell Peak	RMNM SPNM	65 RVDs per week 3 weeks max 142	90 per week for 2 weeks	70-90 RVDs for 1-2 weeks	70-90 RVDs for 1-2 weeks
Burton Creek	RMNM SPNM	65 RVDs per week 3 weeks max 142	90 per week for 1 week	30-70 RVDs for 1 week	30-70 RVDs for 1 week
Burton Peak	SPNM	54 RVDs per week 2 weeks max 134	90 per week for 2-3 weeks	N/A	N/A
Myrtle Peak	SPNM PRIM	54 RVDs per week 2 weeks max 134	90 per week for 3-5 weeks	N/A	N/A
Myrtle Ridge	SPNM	54 RVDs per week 2 weeks max 134	90 per week for 2-4 weeks	N/A	N/A
Trout Lake	PRIM	93 RVDs per week 4 weeks max 200	90 per week for 2-3 weeks	N/A	N/A
Russell Ridge	RMNM	65 RVDs per week 3 weeks max 142	90 per week for 1 week	90 week for 1 week	90 week for 1 week
Fisher Peak	PRIM	10 people per year	90 per week for 2-3 weeks	90 week for 2-3 weeks	90 week for 2-3 weeks

Abbreviations:

- RVD – Recreational Visitor Day
- SPNM – Semi-Primitive Non-Motorized
- Prim – Primitive
- RMNM – Roaded Modified Non-Motorized

Assumptions:

- RVDs are based upon crew production rates (Appendix C.)
- Maximum number of RVDs for a ten-person crew, camping for a five-day workweek, is 90.
- RVDs on chart indicate only the prep time needed and do not include burn time or monitoring.
- RVDs in the Guidelines column are the highest guideline for all the ROS classes of each treatment area. In some cases, the range of acceptable RVDs is substantial. For example, Fisher-Farnham guidelines range from 3 people per year in the Primitive areas, to 65 RVDs per week (and the chance for 3 weeks at 142 RVDs per week to exceed the annual guidelines) in the Roaded Modified Non Motorized areas.

In areas as large as Fisher-Farnham, it would take one ten-person crew three or four years to complete the required work. Social disturbance would continue through the site preparation and burning activities. It could take seven to ten years to accomplish the work in the Trout Creek area. The numbers of people, the potential increase of social encounters, the consistent sounds of sawing, the use of helicopters, and the extended crew camping is unprecedented on this district in Primitive lands. (Crew Production Rates, Appendix C) As displayed in the above table, it is inconsistent with guidelines identified in the Trout Creek Project; regardless of the season the work is proposed.

Monitoring and the amount of reentry to treatment areas is yet undetermined. It is likely that those activities would push guidelines for social disturbance as well.

The disturbance would be considered acute for a long period of time. With luck, when the project work has been completed, the sense of isolation, and solitude would return to the Trout Creek area. If project work were high profile enough, and long enough in duration, it would likely encourage more use to the area. The social setting would then be changed permanently.

Impact to Recreation Features

The Trout Creek Project addresses road condition, trail use, and campsite development at lakes. Roads 634, 2417, 2426, 2428 and 2424 are in the Trout Creek Project. Trails within the Project are: #7, #12, #13, #14, #15, #16, #27, #41, #43, #92, #93, #202, #203, and #221.

Roads:
There would be no new road construction or reconstruction associated with the Whitebark Pine project. (See discussion in the "Effects Common To All Action Alternatives" section in this chapter.) The sights and sounds of work activities would be uncommon for the Trout Creek drainage. Due to the season of the proposed work, the actual number of people affected by those activities would be low.

Trails:

Trails #12, #14, #92, #93 and #202: were discussed in "Effects Common To All Action Alternatives."

Trails #7, #13, #15, #16, #43, #203, and #221:
These trails are all defined as Class III Primitive in nature. They access the heart of the Trout Creek Project area. Portions of each of these trails, with the exception of Trail #16, are in the Selkirk Crest Special Management area. Each of these, including Trail #16, are included in wilderness proposals. These trails do not traverse any treatment areas. Trails #13 and #43 touch the boundaries of the proposed work. There would be no physical change to any of these trails in terms of degree of development and there would not be any increase in the number of campsites along these trails as a result of this project.

The treatments in the Trout Creek Project area would be visible from portions of all trails except Trail #15 and Trail #203, which provide access to Long Mountain Lake and Parker Lake. The treatment areas viewed from these trails would be at a distance, with the possible exception of Trail #43.

All project work activities, as viewed from these trails, would be inconsistent with the sense of remoteness or solitude outlined in the Trout Creek project. (Refer to the discussion on Remoteness and Social Setting.) Crews could potentially use Trail #13, and Trail #43 to access work areas. The potential for social encounters would amplify the loss of solitude to an area recreational user.

The treatment work itself, as viewed from these trails, would be consistent with the lines, textures and mosaics of a natural landscape. (See discussion in Effects Common to All Action Alternatives on Visual Sensitivity.)

Trail #27:

This trail, the Fisher Peak Trail, has high experiential sensitivity. It crosses rugged, primitive lands and introduces the visitor to the Selkirk Crest. Several variations on wilderness proposals have included the Fisher drainage and ridge as appropriate for designation. Past logging activities are obvious over the lower 2.5miles of the trail, but beyond that point the experience is one of strenuous, tranquil isolation. Parts of the old fire tower remain on the peak. The "experience" of man seems remote through time as well as physical proximity. Trail users expect isolation and solitude.

The currently maintained portion of this trail traverses the Fisher-Farnham and Fisher Peak treatment areas. An unimproved segment of Trail #27 crosses the Fisher Peak treatment area. Physically, the ridgeline portion is open and rocky with only pockets of alpine vegetation. Cutoff trails to work areas could easily dominate the mainline trail. The unimproved portion of this trail could well be lost completely during project work.

From a distance, the proposed slashing would ultimately blend in with the rest of the landscape. In the foreground, the work would be consistent with Forest Plan direction, but would be an experiential departure from the roadless lands that Trail #27 accesses. The social setting would not be consistent with the Trout Creek Project. Actual trail use is low so the number of people the treatment activities would affect is minimal.

Trail #41 and Trout Lake:

This trail accesses both Trout Lake and Big Fisher Lake. It crosses wild, unmodified lands for its entirety. It is primitive in nature. Although users do not expect extreme isolation or solitude, social contact is generally temporal and inconsistent. It traverses the entire width of the Trout Lake treatment area and provides the upper border for a major segment of the Fisher-Farnham treatment area. The Fisher-Farnham treatment area encompasses Trout Lake with the exception of the scree field on the southwest side. It is strongly defined and would likely withstand the increased use associated with project preparation and treatment. As with other high elevation areas though, cut-off trails to work sites would easily develop and would be difficult to disguise or close. Without rehabilitation, the non-system trails could confuse trail users and/or encourage greater off-trail hiking.

The physical setting of Trail #41 would be changed. The project impacts would be immediate and long lasting. The post project experience would be unlike what a recreational user would

expect. Due to the placement of the trail on the landscape, visual screening would be extremely difficult, throughout the Trout Lake unit and for the first 1.5 mile of trail through the Fisher-Farnham unit. Although the blackened areas would be consistent with what a user would expect of a wildfire in a remote backcountry area, the existence of stumps, regardless of diameter, is an experiential departure from the unmodified landscape through which the trail passes. Evidence of slashing would be perplexing to Trout Creek recreationists who have been counseled through low impact literature and the backcountry ranger, to leave their saws and axes at home.

The recreational experience at Trout Lake could be changed permanently. In the year following slashing activities, the downed trees would be obvious from the trail and campsites. For a year or so after the burning, large pockets of blackened forest would be visible from or contiguous to the trail and existing campsites. The burned openings could encourage new campsite development or campsite expansion, due to the reduction in brush. That would directly conflict with the ongoing rehabilitation projects outlined in the Trout Creek Project.

Project work activities as viewed from Trail #41 would be inconsistent with the sense of remoteness or solitude outlined in the Trout Creek Project. (Refer to the discussion under Remoteness and Social Setting.) Crews would likely use this trail to access work areas and would likely camp at Trout Lake. The amount of potential social encounters would be inconsistent with Trout Creek guidelines.

Issue # 3 - Acceptability of Changes Outside Trout Creek Project

This discussion concerns the Myrtle Peak, Myrtle Ridge, Burton Peak, Burton Creek, parts of Ball Lakes, Russell Peak, and Russell Ridge treatment areas. Lands in these treatment areas are primarily semi-primitive, non-motorized in nature. The Myrtle Peak treatment area includes a small tract of primitive land; the Russell Peak, Russell Ridge, and Burton Creek treatment areas include lands described as roaded modified and non-motorized. (Refer to the Table 4-4 RVD chart, and Appendix D ROS chart.)

Physical Remoteness and Evidence of Humans

Alternative 2 would not affect the physical remoteness of the semi-primitive lands. Existing trails would not be opened to motorized use. No new roads or trails would be constructed. Due to the presence of work crews, and the sight and sound of helicopters and chainsaws, the sense of remoteness would be disturbed for the duration of the work project. The remote setting would return upon completion of the project.

Social Setting - Solitude While Traveling and Camping

The existing amount of social encounters for lands in the Russell Ridge, Russell Peak, Myrtle Peak, Myrtle Ridge, Burton Peak, and Burton Creek treatments areas is comparable to the number of encounters in lands covered in the Trout Creek Project. The high use season is mid-July through mid-September. Most encounters occur along trails or at trailheads. For all ROS classes, in high use season, during the week, it is uncommon to encounter another group along the trails or walking cross-country. On weekends it is likely that groups pass each other. After mid-September, the chance of encountering another person or group is unusual. In the project

area, those lands described as roaded modified and non-motorized (Russell Ridge and parts of Russell Peak and Burton Creek treatment areas) actually tend to have lower use levels than Class III primitive lands. Although closed roads in these areas could be used as non-motorized trails, the primary use they receive is from huckleberry pickers and hunters. Most of the use is concentrated within about one mile of the road closure.

Though the actual number of recreationists affected by work activities is likely to be low, the social disturbance of a project like this is rare in these lands. It would last for the duration of the work activities and would be an extreme departure from typical recreation visitor expectations. The social setting would not be changed permanently.

Impact to Recreation Features

Roads:
There would be no short-term or permanent effect to the roads as a result of this project.

Trails:

Trails #9, #12, #92, #286:

Trails #12 and # 92 were discussed in "Effects Common to all action Alternatives". Trails #286 (Myrtle Peak) and #9 (Burton Peak) are the only system trails affected in treatment areas not covered by the Trout Creek Project. They are both significant, mainline trails on the district. Trail #286 accesses Myrtle Peak and Myrtle Lake. It offers some of the most far-reaching views in the Selkirks. Trail #9 climbs to Burton Peak and Burton Cabin. Both trails have been touted in regional and national trails guides.

Burton cabin is an historic lookout cabin. The cabin design is unique for this area, and although it is in poor repair, it represents a glimpse into the Districts' past. The cabin creates a sense of discovery and has a wide appeal to backcountry recreational users. It is visible from the Kootenai valley and serves as a landmark.

Each trail travels through treatment areas for more than a mile. From the trails, the post project experience would be consistent with what a recreational user might expect as the result of a wildfire in a remote backcountry area. While stumps would be a departure from the existing setting, both trails were historically "work" trails where trees were cut for trail clearing. Burton Peak and Myrtle Peak both had cabins and lookouts. Old phone lines ran the ridgeline. There are helispots on each trail. Although many of the views accentuate pristine, rugged landscapes, many views also include heavy modification on both private and federal lands. Small diameter, blackened stumps, would likely not be very noticeable in this semi-primitive environment.

Portions of both Trails #9 and #286 traverse open, rocky areas with only pockets of vegetation. In those areas parts of the mainline trails are often indistinct. Cutoff trails to work areas could easily develop and dominate the system trail.

The Burton cabin is in the middle of the Burton Peak treatment area. Although it is in the open, there is the potential that sparks could ignite the old building; it will be protected as described in Chapter 2 Required Design Criteria for cultural resources.

Issue #4 - Scenic Integrity Consistent with Selkirk "Sense of Place."

Physical and Social Impacts as viewed from prominent peaks and recreation features within the project area.

The physical and social impacts of this project on lands within the project area have been discussed throughout this report. (Please see "Effects Common to all Action Alternatives" as well as discussion on impact to individual recreation features.)

Physical and Social Impacts as viewed from prominent peaks and recreation features outside the project area.

Prominent peaks or recreation features that are on the project area boundary or outside the project boundary which could be effected include West Fork Mountain, Abandon Mountain, Lion's Head, Harrison Peak, Red Top, Joe Peak, Cooks Peak, Shorty Peak, and Lookout. Although visual sensitivity is high from any of these peaks, project activities would only be apparent at a distance. Sights and sounds of work crews and helicopters would likely not overpower the recreation experience. Distance to the project work, coupled with the fact that these peaks often overlook greatly modified landscapes in other directions, would reduce the sensitivity of the observer to sights and sounds of work activities.

Activities seen from peaks and features that are a greater distance from the project area would be noticed only incidentally.

In the long term, from a distance, all physical changes to the landscape would be consistent with the Selkirk "sense of place."

Summary – Alternative 2

The implementation of Alternative 2 is incompatible with all long-term (based on historical activities, long-term impacts for these lands are those that exceed repeated short-term entry for more than three consecutive years) and short-term goals and guidelines for recreation within the project area. It exceeds all of the guidelines and closures developed in the Trout Creek Project. This alternative would also change the recreation environment and the "sense of place" for many users throughout the project area for the long term. Depending on the interpretations of what activities are permissible in wilderness areas, this alternative may not adequately protect the Management Area 11 lands, (proposed wilderness areas in the Forest Plan) for future wilderness designation.

Alternative 3

Issue #1 - Protect Wilderness Values

The discussion is exactly the same as for Alternative 2, with the exception of the number of acres treated. This alternative proposes restoration of whitebark pine on only 165 acres, with an estimated 65 acres of possible secondary burn within the proposed wilderness.

Issue #2 - Consistency with Guidelines Developed in the Trout Creek Project

This discussion concerns the Cutoff Peak, Long Canyon, Big Fisher, Fisher Peak, Farnham Ridge, and some of the Ball Lakes, Russell Peak, and Russell Ridge treatment areas.

All the lands in Long Canyon and Fisher treatment areas, and some of the lands in Cutoff Peak, Big Fisher, Farnham Ridge, and Ball Lakes treatment areas are primitive in nature. This alternative proposes to treat approximately 620 acres of primitive land.

The remaining lands are semi-primitive non-motorized or roaded modified in nature.

Physical Remoteness and Evidence of Humans

The physical remoteness of primitive lands would be affected. Camping would be necessary to accomplish preparation work. The potential for inadvertent development of social trails and enlarged campsites, is high. Yet, it is reasonable that campsites identified in the Trout Creek Project and already developed helispots are adequate for work crews. With careful consideration, necessary campsites could be identified in Class III Primitive lands rather than in Class I or II thereby protecting the most sensitive landscapes from degradation. Rehabilitation of campsites and social trails would be difficult; but the impacts would not likely be long-term in nature. (Based on historical activities, long-term impacts for these lands are those that exceed repeated short-term entry for more than three consecutive years.)

The sense of remoteness would decrease proportionate to the increased number and size of campsites needed for project work. Due to the presence of work crews, and the sight and sounds of helicopters and chainsaws, the sense of remoteness would be disturbed for the duration of the work. The noise disturbance would extend beyond the individual treatment areas. Upon completion of project work, this portion of the remoteness factor would return to acceptable standards. (Please see Crew Production Table in Appendix C, and RVD Table 4-4, for time comparisons between alternatives.)

The physical remoteness of semi-primitive and roaded modified lands would remain generally unaffected by the project work.

Social Setting - Solitude While Traveling and Camping

Trout Creek Project guidelines and the actual number of recreational users affected by project work is discussed in the Alternative 2 analysis. They remain the same for Alternative 3.

In **Alternative 3**, social encounters would be most common in the Big Fisher treatment area. The necessary camping and work time needed for area preparation is very similar to past trail crew activities (1 ten-person crew for a couple of weeks). The departure from historic activities is the season in which the work would be done, as well as that most of the work would be done in the most primitive, Class I, and Class II Primitive, lands.

In Class I and Class II Primitive lands, any encounter would be unlikely. Encountering a work crew would be extraordinary, and would exceed Trout Creek Project guidelines.

In Alternative 3, with the exception of the Fisher Peak treatment area, project work activities fall within the high range of acceptable social impact under the Trout Creek Project guidelines. Any added recreational use would likely push social impacts beyond those guidelines. Work in the Fisher Peak treatment area is generally inconsistent with Trout Creek guidelines, yet within the past 10 years there has been sufficient wildfire activity in the Fisher area that primitive social guidelines have been compromised.

It could take two to three years to implement Alternative 3, in the Trout Creek area. Social disturbance would continue as long as crews prepare treatment areas and do the burning. The numbers of people, the potential for increase of social encounters, the sounds of sawing, and the use of helicopters, is on the high side of Trout Creek project guidelines, but is not totally inconsistent with past activities in the area (see Trout Creek Disturbance History pages 3-22 through 3-23.) The effect of Alternative 3 would be considered short-term.

Monitoring and the amount of reentry to treatment areas is yet undetermined. Due to the size of the treatment areas, it is likely that those activities would fall within an acceptable social impact range.

Impact to Recreation Features

The Trout Creek Project area recreation features in Alternative 3 are the same as identified in Alternative 2.

Roads:
The effect on the Trout Creek Road is the same as Alternative 2.

Trails:
Trails # 12, #14, #92, #93, and # 202:
The effects on these trails were discussed in “Effects Common to All Action Alternatives.”

Trails #7, #13, #16, #41, #43, #203, and #221:
These trails do not traverse through any of the treatment areas. Trail #41 borders a small segment of the Big Fisher treatment area. Trail #43 borders a small segment of the Ball Lakes Treatment area. There would be no physical change to any of these trails in terms of degree of development as a result of implementing Alternative 3. There would be no increase in the number of campsites along these trails as a result of this project.

Alternative 3 treatments areas would be visible from portions of all trails except Trail #203 (See Alternative 2 discussion). Views of treatment areas would be of short duration but are usually obscured by vegetation. Although project work activities, as viewed from these trails would be inconsistent with the sense of remoteness or solitude outlined in the Trout Creek Project, the visual screening is such that it would be unusual for a recreation user to experience the disturbance. The duration of the work activities in the Trout Creek area is short, being only one to two weeks in each area.

The treatment work itself, as viewed from these trails would be consistent with the lines, textures and mosaics of a natural landscape.

Trail #27:
The effects are the same as for Alternative 2, except that this trail only traverses through the Fisher Peak treatment area. Impact to the trail in Alternative 3 is reduced slightly from the impact with implementation of Alternative 2.

Issue # 3 - Acceptability of Changes outside the Trout Creek Project
This discussion concerns Burton Creek and parts of Ball Lakes, Russell Peak, and Russell Ridge treatment areas. Lands in these treatment areas are primarily semi-primitive non-motorized in nature. The Russell Peak, Russell Ridge, and Burton Creek areas each have some lands described as Roaded Modified and Non-Motorized.

Physical Remoteness and Evidence of Humans
The discussion is the same as for Alternative #2

Social Setting-Solitude While Traveling and Camping
The discussion is the same as for Alternative #2.

Impact to Recreation Features

Roads:
There would be no permanent or short-term effect to the roads as a result of this project.

Trails:
Trails #12 and #92 have been discussed in "Effects Common to all Action Alternatives".
No other trails, outside the parameters of the Trout Creek Project, are affected by this Alternative.

Issue #4 - Scenic Integrity consistent with Selkirk "sense of place."

Physical and Social Impacts as viewed from prominent peaks and recreation features within the project area:
The discussion is the same as for Alternative #2.

Physical and Social Impacts as viewed from prominent peaks and recreation features outside the project area:
The discussion is the same as for Alternative #2.

Summary – Alternative 3

Alternative 3 is compatible with most goals and guidelines for recreation within the project area. Some short-term effects are inconsistent with the recreation guidelines. (Based on historical activities, long-term impacts for these lands are those that exceed repeated short-term entry for more than three consecutive years.) However, whitebark pine trees are an integral part of the high elevation environments as well as an important component of high elevation recreation. Maintaining the rapidly declining whitebark pine populations within the Selkirk Mountains, through the implementation of Alternative 3, justifies these short-term deviations from the area guidelines.

This alternative would use management-ignited fire on 165 acres within MA11 without any use of chainsaws to prepare a fuel bed. Such activities are consistent with the Forest Plan. Depending on interpretations of permissible activities in wilderness areas, this may no adequately protect these lands for future wilderness designation.

The short-term inconsistencies with the guidelines are generally "social" in nature and result in moderate impacts. They are: visual quality, the number of campsites created, the size of the campsites, and the number of people encountered per week (refer to Appendix D ROS charts). Since this occurs in the more remote portions of the project area, the number of people actually directly affected is anticipated to be low to moderate in number.

Alternative 4

The effects of implementing Alternative 4 are the same as for Alternative 3, except that the MA11 lands (proposed wilderness areas) are dropped from consideration for treatment. A total of 408 acres of primitive lands would be treated in this alternative.

Issue #1- Protect Wilderness Values

None of the proposed treatments are located within MA11, the proposed wilderness areas identified in the Forest Plan. Some of the proposed treatment areas are located on primitive lands outside of MA11 that have been included in several past wilderness proposals. Based upon Forest Plan direction, Alternative 4 removes the concern of protecting wilderness values on MA11 lands in the Selkirks.

Issue #2- ***Consistency with Guidelines Developed in the Trout Creek Project*****,**
Issue #3- ***Acceptability of Changes outside the Trout Creek Project*** **,**
Issue #4 - ***Scenic Integrity consistent with Selkirk "sense of place."***

The discussion is the same as for Alternative #3.

Summary – Alternative 4

Alternative 4 is the most compatible with both short-term and long-term goals and guidelines for recreation within the project area of all of the action alternatives. Based on historical activities, long-term impacts for these lands are those that exceed repeated short-term entry for more than three consecutive years.

The concerns for protection of the proposed wilderness areas is eliminated with the implementation of this alternative, since there are not any restoration treatments proposed within any of these lands.

The short-term inconsistencies are the same as with Alternative 3.

4.5 Wildlife

This section displays and discusses the effects on those wildlife species that may be affected by the proposed actions. See Chapter 3 Wildlife for more information on the criteria for selecting the species. Effects discussions include direct, indirect and cumulative effects, all of which may have positive or negative consequences.

A. Cumulative Effects Analysis

A determination of the cumulative effects analysis area is based on each species' relative home range size in relation to its available habitat, topographic features which relate to how species move and utilize their home range (e.g. watershed boundaries), and boundaries that represent the point of diminishing potential effects (Table 4-5).

The Whitebark Pine project lies within the Selkirk Mountains of the Bonners Ferry Ranger district and includes a checkerboard of private ownership in the Myrtle Creek and Smith Creek drainages. These other ownerships cannot be relied upon for long-term habitat contributions because they are highly susceptible to adverse modifications (e.g. rural developments, forest land conversions) and irretrievable alterations. While private lands within the IPNF Administrative Boundary may provide suitable habitat for some species analyzed, we lack data to adequately assess these areas, and therefore assume that they are providing no habitat for these species.

Subsequent to the emergency listing of the Selkirk Mountains population of woodland caribou as “endangered” under the ESA in 1984, the USFS, USFWS, and IDF&G cooperatively developed Caribou Management Units (CMUs) on USFS lands within the designated recovery zone. While no specific habitat standards have been developed for caribou habitat, individual CMUs have been determined to be an appropriate cumulative effects analysis area for the species.

Lynx Analysis Units (LAUs) were delineated following standards outlined within the Lynx Conservation Assessment and Strategy (LCAS, Ruediger et al. 2000). LAUs were not depicted to replicate actual lynx home ranges, but their scale approximates the size of area used by an individual lynx. The size of LAUs would generally be from 16,000 to 25,000 acres in contiguous habitat, and likely be larger in less contiguous, poorer quality, or naturally fragmented habitat. The LCAS has determined that individual LAUs are a suitable cumulative effects analysis area for lynx.

To facilitate management and effects analysis, the Selkirk Grizzly Bear Recovery Zone is divided into Bear Management Units (BMUs), each of which is approximately the home range size of an adult female grizzly bear. Based on research, the average home range was determined to be approximately 100 square miles in size. Each BMU was assumed to represent a viable home range that would spatially meet the needs of a resident female grizzly bear. Each BMU is not intended to be the actual home range of known adult female grizzly bears, but is used to analyze cumulative effects. By maintaining sufficient suitable habitat quality in each BMU, then the entire recovery area would remain as viable habitat.

For the analysis of effects on black-backed woodpecker, the Whitebark Pine Project area boundary described in Chapter 2 will be used as the cumulative effects analysis area. The

project area is bordered by watershed boundaries on the north and south, and by the IPNF Administrative boundary on the east and west. Project area boundaries were drawn to include any subwatersheds that may be impacted by the proposed action. The area itself is of sufficient size to include entire home ranges of black-backed woodpeckers. As discussed above, other ownerships cannot be relied upon for long-term habitat contributions; so it is assumed that these ownerships are not providing suitable black-backed woodpecker habitat.

Table 4-5. Project impact zones for species analyzed.

Species Analyzed	Cumulative Effects Area
Woodland caribou	Caribou Management Unit (CMU)
Canada lynx	Lynx Analysis Unit (LAU)
Grizzly bear	Grizzly Bear Management Unit (BMU)
Black-backed woodpecker	Project area

The cumulative effects analysis for alternatives is an aggregate representation of past, present and reasonably foreseeable actions, whether they are human-caused or natural events. Past disturbances used in this analysis are discussed in the Vegetation section of Affected Environment and are reflected in the current habitat conditions. The expected changes to habitat (i.e. stand structure) are from the proposed actions. Ongoing and reasonably foreseeable actions within the assessment area, as identified in Section 2.8, are as follows:

- Firewood gathering
- Treatment of noxious weeds
- Routine trail maintenance
- Timber stand improvement
- Myrtle-Cascade FEIS timber sales
- Bonners Ferry Ranger District Small Sales EIS
- Myrtle Fire Salvage

B. Analysis Indicators for Selected Species

Table 4-6 below displays the indicators that will be used to measure effects on wildlife species. Indicators for each species vary and are based on those factors that could result in a measurable adverse or beneficial effect. For most species being analyzed, appropriate habitat parameters were measured to distinguish suitable habitat (specific parameters for individual species are located in the project file). A discussion of the changes in suitable habitat for each relevant species and the effects on species are disclosed in following discussions.

Table 4-6. Issue indicators used to measure effects

Species	Indicator
Woodland caribou	▪ Changes to seasonal habitats -- measured as acres of suitable habitat treated in primary treatment areas and secondary burn areas
Canada lynx	▪ Changes to important habitat components (denning, unsuitable)
Grizzly bear	▪ Changes in road densities, and impacts to secure and core habitat
Black-backed woodpecker	▪ Changes in distribution and quality of snag habitat

Discussion of Effects Common to Alternatives 3 and 4

Because Alternatives 3 and 4 differ only in that the Long Canyon treatment area is not present in Alternative 4, they are discussed together in the analysis of each species.

C. Threatened or Endangered Species

C-1. WOODLAND CARIBOU

(i) Methodology

Woodland caribou habitat was evaluated using a habitat suitability model derived from data in the Forest timber stand database (TSMRS). Modeling rules and assumptions can be found in the project file. Since we lack adequate vegetation data on surrounding private lands, it is assumed that these lands make no contribution to caribou habitat, even though there may be suitable patches within these ownerships.

The potential effects on woodland caribou and its habitat were determined by predicting the change to habitat components that would result from each alternative. Because of the expected reduction of canopy cover in treatment areas regardless of prescription, it is assumed that all treatment areas will be rendered unsuitable by project activities. Likewise, stands in the secondary burn area may also lose sufficient canopy cover to remain suitable. As a worst-case scenario, the effects analysis assumes that the amount of suitable habitat lost will be the sum of primary treatment and secondary burn areas. However, it is unlikely that all secondary burn areas will, in fact, completely burn. Similarly, substantial portions of primary treatment areas may retain sufficient canopy cover to remain suitable for various seasonal habitat components.

It is also important to remember that forest stands in caribou habitat may currently be suitable for more than one season of use. As a result, merely summing the suitable seasonal habitat acres impacted by project activities will grossly overestimate the amount of suitable habitat to be treated. Approximate acres of total suitable caribou habitat for primary treatment areas and secondary burn areas are given in the leading paragraph under each alternative, as well as in Table 2-10.

Throughout the discussion of effects of this project on woodland caribou, it should be kept in mind that the HCI/HSI model used to identify suitable habitat is a mid-scale model and can not distinguish canopy covers at a fine scale by tree species. Ground-truthing has been done to determine if a given treatment would reduce the suitability of a stand based on the prescription, the existing and residual condition, seasonal habitat, and configuration of tree species in the stand.

For instance, the model will likely rate a stand as suitable (HSI>=0.5) even if the canopy cover required to achieve that rating includes a high proportion of whitebark pine or other tree species that do not contribute to the overall structural characteristics required by caribou. This is because the model differentiates current cover type suitability if the desired cover types (i.e. spruce/fir or cedar/hemlock) dominate the stand's total basal area (i.e. >=50% basal area). So, a stand with 48% whitebark / 52% spruce/fir in the basal area will still be rated by the model as suitable (HSI>=0.5) for caribou (all other variables being suitable). In reality, however, whitebark pine stands are not highly preferred by caribou as foraging areas in this ecosystem.

The discussion of effects is further complicated by the fact that HCI/HSI ratings are run at the stand level - not for an entire treatment area. This is because the best data available for timber stand vegetation plots is done at the stand level. Hence, the overall treatment area can have sections of high and low HSI ratings. So, in the example concerning whitebark pine, when this species dies off, a stand will likely increase in suitability - particularly if it serves enhance the remaining spruce/fir trees. As long as the canopy is not reduced to levels below typical caribou use (i.e. generally < 25%), the stand generally remains suitable for all spruce/fir seasons. If whitebark pine is clustered in a given area and suffering high mortality, that microsite (which would be too small to be detected in the database or model) would not be preferred foraging habitat anyway, so treating (burning) it may not reduce suitability. Finally, the small openings created may be beneficial to caribou because these sites can produce attractive caribou forage used during the spring and summer seasons (Allen 1998a).

(ii) Effects Common to All Alternatives

During September, 2003, a mixed-severity wildfire affected approximately 15 percent of the Myrtle Creek watershed. While the perimeter of the fire encompassed some 3,600 acres, there was a mosaic effect within this perimeter, ranging from stand-replacing burn to relatively intact vegetation.

The fire affected approximately 555 acres of the Myrtle CMU, about 300 acres of which were capable for one or more seasonal habitat components. However, only 32 acres each of currently suitable *EWSF* and spring habitat, and 14 acres of summer habitat, were impacted. An additional 35 acres of suitable *EWCH* were affected by the fire.

The effects of this fire are common to all alternatives in the sense that the existing condition would be slightly different than what is reported in Table 4-7. However, from a cumulative effects standpoint, only Alternative 2 is discussed; since no other alternatives propose treatment in the Myrtle Creek watershed.

Alternative 1

Direct and Indirect Effects

The no action alternative would retain the amount and quality of habitat currently available. For the short term, conditions would remain essentially as they are today, and the stands proposed for action to restore whitebark pine would not be treated. As a result, the high mortality of whitebark pine individuals and the transition of these areas to subalpine fir/spruce forest types would, over time, improve caribou habitat as these stands mature and lichen loads increase. In addition, there would be less disturbance to caribou under this alternative because there would be considerably less administrative activity (disturbance) at high elevations than under the action alternatives.

However, no action would continue the incremental trend towards increased fire risk in caribou habitat. This increased fire risk may cause a catastrophic stand replacing fire in caribou habitat at some point in the future. Since high elevation, exposed ridges often suffer lightning strikes, it is possible that the increased fuel accumulation in proposed treatment areas (due to heavy tree mortality) could provide a start zone or facilitate the spread of wildfire through the area.

Alternative 2

Direct and Indirect Effects

Alternative 2 would treat approximately 2,967 acres of currently suitable caribou habitat in the primary treatment areas, and as much as 1,014 acres of suitable habitat in secondary burn areas. This includes nearly 1,200 acres of *EWSF* and almost 1,900 acres of *Key* habitat across four CMUs (Table 4-7). In addition, over 600 acres of *EWSF* and more than 700 acres of *Key* habitat may be impacted in the secondary burn areas. There would also be a conversion to unsuitable condition of thousands of acres of other seasonal habitat components (with the exception of *EWCH*) in this alternative. Arrangement of Alternative 2 treatment areas within individual CMUs is shown in Figure 4-3.

While the Cow CMU is within the Whitebark Pine project area, the closest treatment area (Cutoff Peak) is more than two miles from this CMU. Therefore, there would be no measurable effects to caribou habitat within the Cow CMU as a result of this proposal.

Within the Smith CMU, approximately 290 acres would be treated, all in the Cutoff Peak treatment area. These treatments would eliminate 26 acres of *EWSF* along with late winter and calving habitat. The secondary burn area could potentially affect an additional 70 acres, including about 25 acres of *EWSF*. Late winter and calving habitat could also be affected in the secondary burn area. While less than two acres of *Key* habitat would be affected, as much as 51 acres of currently suitable *EWSF* (1.5% of capable) could be eliminated in Smith CMU with this alternative.

Approximately 432 acres would be treated in the Long-Parker CMU, encompassing the entire Fisher Peak and Long Canyon treatment areas, and about half of the Cutoff Peak treatment area. Treatments would modify substantial acreages of all seasonal caribou habitat components (except *EWCH*) in this CMU, including approximately 39 acres of *EWSF* and some 322 acres of

Key habitat. An additional 341 acres could be impacted in the secondary burn area in this CMU, including approximately 81 acres of *EWSF* and as much as 111 acres of *Key* habitat. This alternative could potentially reduce *EWSF* in the Long-Parker CMU by 120 acres (2.3% of capable) and cause a 433 acre reduction of *Key* habitat (11.3% of capable).

The Trout-Ball CMU would include approximately 2,935 acres of treatment in the Trout Lake, Russell Ridge, Russell Peak, Fisher-Farnham and Ball Lakes treatment areas. As with the Long-Parker CMU, substantial acreages of all seasonal caribou habitat components (except *EWCH*) would be impacted in this alternative. Treatments would affect approximately 300 acres of *EWSF* and 719 acres of *Key* habitat. An additional 771 acres could be impacted in the secondary burn area, including 167 acres of *EWSF* and as much as 300 acres of *Key* habitat. As a result, this CMU could lose as many as 467 acres of *EWSF* (6.1% of capable) and 1,019 acres of *Key* habitat (17.8% of capable) in this alternative.

Table 4-7. Acres of seasonal caribou habitat impacted – Alternative 2 (primary treatment areas only).

CMU (% in the Project Area)	**Seasonal Habitat Suitable acres impacted by Project activities /** *(% of Capable)*						
	Late Winter	**Spring**	**Calving**	**Summer/Rut**	**Key**	**Early Winter (WC/WH)**	**Early Winter (SAF)**
Cow (17)	0	0	0	0	0	0	0
Smith (100)	37 *(0.5)*	<1	79 *(1.2)*	3 *(<0.1)*	<1	0	26 *(0.3)*
Long-Parker (100)	398 *(6.1)*	326 *(4.4)*	404 *(5.9)*	327 *(5.5)*	322 *(8.4)*	0	39 *(0.8)*
Trout-Ball (100)	1,087 *(10.6)*	709 *(7.2)*	1,103 *(11.7)*	709 *(8.0)*	719 *(12.6)*	0	300 *(3.9)*
Myrtle (100)	1,381 *(12.2)*	904 *(6.2)*	1,360 *(15.7)*	930 *(7.6)*	854 *(15.5)*	0	815 *(6.9)*
TOTAL*	***2,903***	***1,938***	***2,945***	***1,968***	***1,895***	***0***	***1,179***

*****Alternative 2 would treat about 2,967 acres of currently suitable habitat in primary areas, and as much as 1,014 acres in secondary burn areas. Because forest stands in may currently be suitable for more than one season of use, merely summing the figures in this table will overestimate the amount of suitable habitat to be treated.

Figure 4-3. Alternative 2 Treatment Areas within Woodland Caribou Management Units (CMUs).

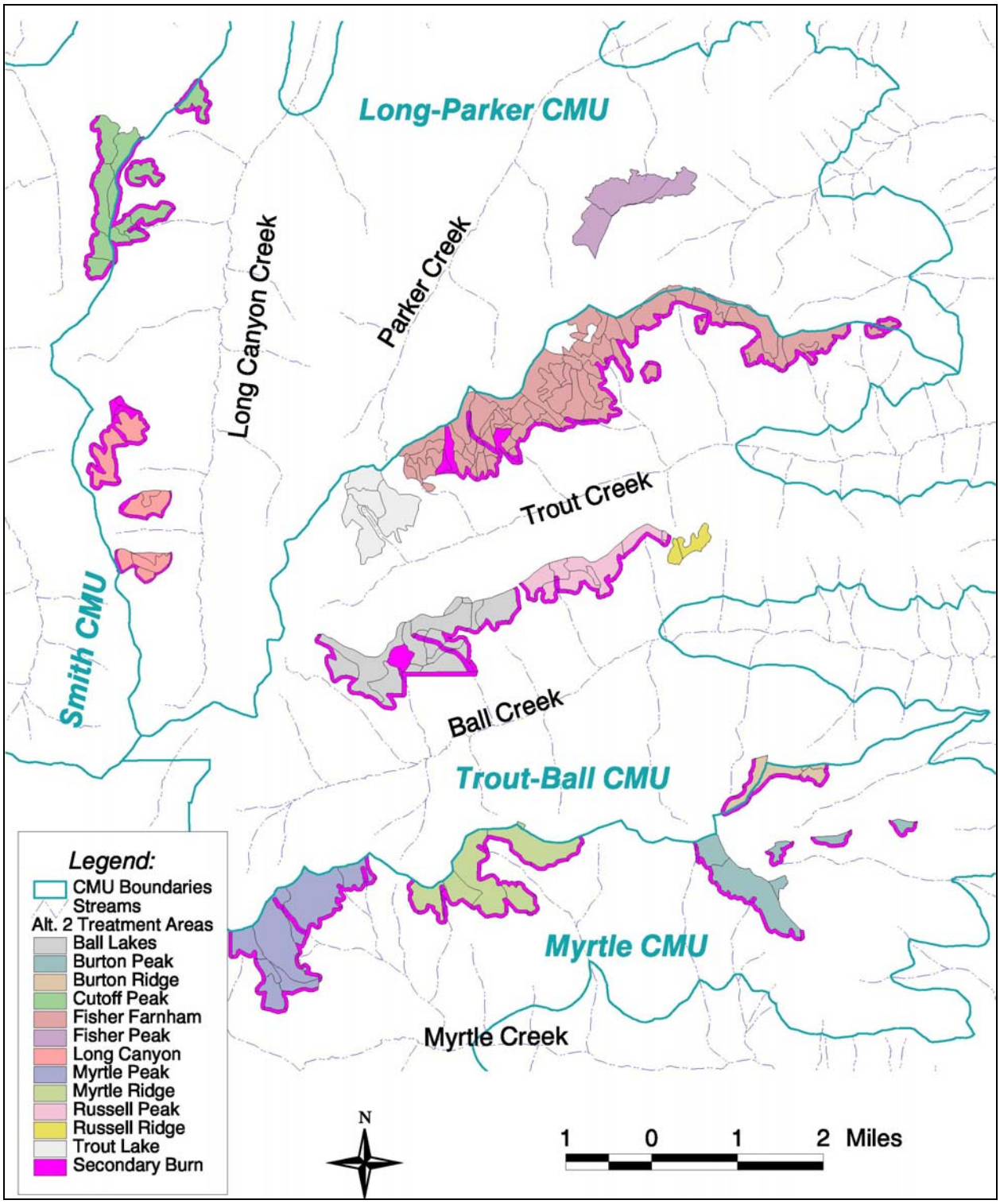
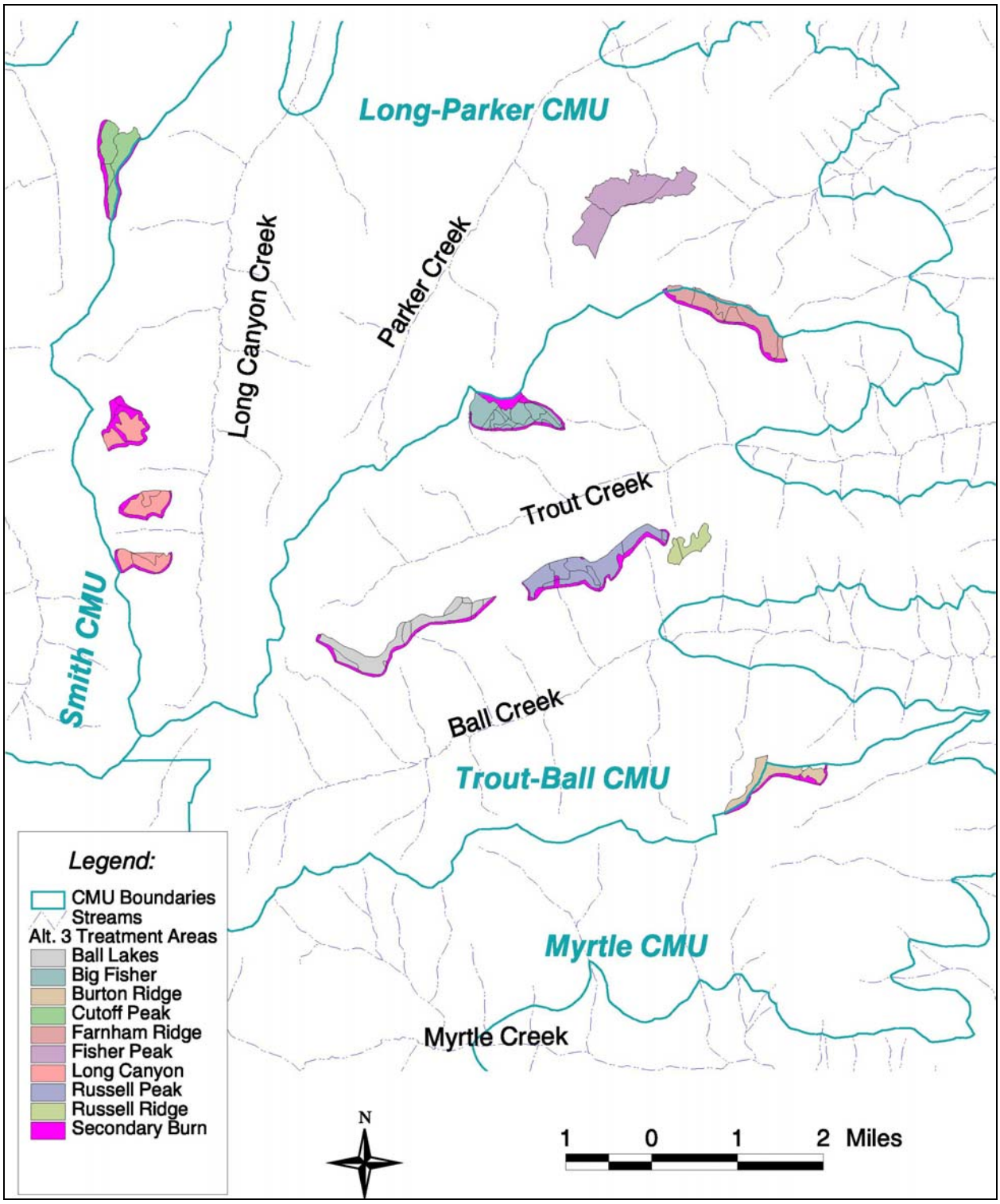


Figure 4-4. Alternative 3 Treatment Areas within Woodland Caribou Management Units (CMUs).



Treatments would impact approximately 1,522 acres of caribou habitat within the Myrtle CMU in the Burton Peak, Burton Ridge, Myrtle Peak and Myrtle Ridge treatment areas. There would potentially be substantial loss of all seasonal caribou habitat components (except *EWCH*), including approximately 815 acres of *EWSF* and 854 acres of *Key* habitat. The secondary burn area may impact an additional 480 acres, including 339 acres of *EWSF* and 305 acres of *Key* habitat. The end result of this alternative would be alteration of as many as 1,154 acres of *EWSF* (9.8% of capable) and 1,159 acres of *Key* habitat (21.1% of capable) in the Myrtle CMU. An additional 32 acres (0.3%) of *EWSF* may have been rendered unsuitable by the Myrtle Creek fire.

Treatments would alter the character of suitable early winter foraging habitat; but it is unlikely that these stands are currently carrying high lichen loads due to the nature of these stands (relatively open with a high proportion of whitebark pine and heavy tree mortality) (Allen, pers. comm. 2003). However, this alternative would interrupt the successional advance of these stands toward more closed canopy subalpine fir/spruce habitat. In the long term, Alternative 2 would limit the amount of caribou foraging (lichen-producing) stands by delaying this successional pattern by 20-30 years.

Alternatives 3 and 4

Direct and Indirect Effects

Several treatment areas have been dropped between Alternative 2 and Alternatives 3 & 4, including the Burton Peak, Myrtle Peak and Myrtle Ridge areas. In addition, the 1,634 acre Fisher-Farnham treatment area has been subdivided into the Farnham Ridge and Big Fisher treatment areas totaling only 362 acres. All remaining proposed treatment areas are also considerably reduced in acreage (Figure 4-4). As a result, Alternative 3 would treat approximately 650 acres of currently suitable caribou habitat in the primary treatment areas, and as much as 187 acres of suitable habitat in secondary burn areas. Treatment area prescriptions and patterns for remaining areas would be the same as those reported for Alternative 2 (Tables 4-8, 4-9).

The difference between Alternatives 3 and 4 is that Alternative 3 contains the Long Canyon treatment area while Alternative 4 does not. Alternative 4 would treat approximately 466 acres of currently suitable caribou habitat in the primary treatment areas, and potentially 146 acres of suitable habitat could be impacted in secondary burn areas. Only approximately 30 acres of *EWSF* would be directly impacted by each of these alternatives. Approximately 343 acres of *Key* habitat would be treated in Alternative 3, while 217 acres of *Key* habitat would be treated in Alternative 4. Secondary burn areas may affect an additional 67 acres of *EWSF* and 139 acres of *Key* habitat in Alternative 3. In Alternative 4, secondary burn areas may impact 51 acres and 95 acres of *EWSF* and *Key* habitat, respectively.

As with Alternative 2, there are no treatment areas within the Cow CMU in these alternatives; subsequently there would be no measurable effects to caribou habitat in this CMU as a result of Alternatives 3 and 4.

Approximately 143 acres would be treated in the Smith CMU, all in the Cutoff Peak treatment area. This would impact approximately 4 acres of *EWSF* and no key habitat. An additional 30

acres could be affected in the secondary burn area, including about 10 acres of *EWSF* and perhaps two acres of *Key* habitat. The overall reduction of *EWSF* in Smith CMU from these alternatives would be less than 0.2% of capable. Less than 0.1% of *Key* habitat may be affected.

Table 4-8. Acres of seasonal caribou habitat impacted - Alternative 3 (primary treatment areas only).

CMU (% in the Project Area)	Seasonal Habitat Suitable acres impacted by Project activities / *(% of Capable)*						
	Late Winter	**Spring**	**Calving**	**Summer/Rut**	**Key**	**Early Winter (WC/WH)**	**Early Winter (SAF)**
Cow (17)	0	0	0	0	0	0	0
Smith (100)	11 *(0.2)*	0	11 *(0.2)*	1 *(<0.1)*	0	0	4 *(<0.1)*
Long-Parker (100)	178 *(2.7)*	126 *(1.7)*	184 *(2.7)*	126 *(2.1)*	126 *(2.3)*	0	0
Trout-Ball (100)	437 *(4.3)*	204 *(2.1)*	455 *(4.8)*	204 *(2.3)*	217 *(3.8)*	0	26 *(0.3)*
Myrtle (100)	<1	<1	<1	<1	<1	0	<1
TOTAL*	***626***	***330***	***650***	***331***	***343***	***0***	***30***

**Alternative 3 would treat approximately 650 acres of currently suitable caribou habitat in the primary treatment areas, and as much as 187 acres of suitable habitat in secondary burn areas. Because forest stands in caribou habitat may currently be suitable for more than one season of use, merely summing the figures in this table will overestimate the amount of suitable habitat to be treated.*

In the Long-Parker CMU, approximately 537 acres would be impacted by Alternative 3 in the Long Canyon and Fisher Peak treatment areas. This would include approximately 126 acres of *Key* habitat and no *EWSF*. Additionally, as many as 135 acres could be part of the secondary burn area, including 16 acres of *EWSF* and 44 acres of *Key* habitat. Alternative 3 would reduce *Key* habitat by as much as 4.4% and potentially reduce *EWSF* by 0.3%. Alternative 4 would treat only the 324 acres in the Fisher Peak treatment area, none of which are currently suitable caribou habitat (Table 4-9). Since the treatment in this area is whitebark pine release, there would be no secondary burn area created. As a result, percentages of habitat components in the Long-Parker CMU would be unchanged from current condition in Alternative 4.

Treatment would affect approximately 903 acres in the Trout-Ball CMU in both alternatives. This includes approximately 26 acres of *EWSF* and 217 acres of *Key* habitat. An additional 217 acres could be impacted in the secondary burn area, including 26 acres of *EWSF* and 72 acres of *Key* habitat. These alternatives could reduce *EWSF* habitat by as much as 0.7%, and may cause a 5.1% reduction in *Key* habitat.

Table 4-9. Acres of seasonal caribou habitat impacted - Alternative 4 (primary treatment areas only).

CMU (% in the Project Area)	Seasonal Habitat Suitable acres impacted by Project activities / *(% of Capable)*						
	Late Winter	**Spring**	**Calving**	**Summer/Rut**	**Key**	**Early Winter (WC/WH)**	**Early Winter (SAF)**
Cow (17)	0	0	0	0	0	0	0
Smith (100)	11 *(0.2)*	0	11 *(0.2)*	1 *(<0.1)*	0	0	4 *(<0.1)*
Long-Parker (100)	0	0	0	0	0	0	0
Trout-Ball (100)	437 *(4.3)*	204 *(2.1)*	455 *(4.8)*	204 *(2.3)*	217 *(3.8)*	0	26 *(0.3)*
Myrtle (100)	<1	<1	<1	<1	<1	0	<1
TOTAL*	***448***	***204***	***466***	***205***	***217***	***0***	***30***

**Alternative 4 would treat approximately 466 acres of currently suitable caribou habitat in the primary treatment areas, and potentially 146 acres of suitable habitat could be impacted in secondary burn areas. Because forest stands in caribou habitat may currently be suitable for more than one season of use, merely summing the figures in this table will overestimate the amount of suitable habitat to be treated.*

Since only a portion of the Burton Ridge treatment area is in the Myrtle CMU in Alternatives 3 and 4, only about 64 acres would be affected by treatment. No measurable amounts of any currently suitable caribou habitat component would be affected in primary treatment areas. An additional 33 acres are within the secondary burn area, including 15 acres of *EWSF* and 21 acres of *Key* habitat. Treatments could alter as much as 0.4% and 0.1% of capable habitat for *EWSF* and *Key* habitat, respectively.

Alternatives 3 and 4 would alter only 30 acres of suitable early winter foraging habitat, and only a few hundred acres of other seasonal habitat components. Similar to Alternative 2, these alternatives would also retard the conversion of affected stands to suitable foraging habitat, but on a considerably smaller scale.

(iii) Cumulative Effects Common to All Alternatives

The following past, ongoing and reasonably foreseeable actions are considered relevant in a cumulative effects discussion for woodland caribou:

Firewood Gathering - This ongoing activity takes place along open road segments, well away from any proposed treatment areas. This activity is unlikely to alter vegetative characteristics in such a way as to affect caribou habitat because it would only remove occasional standing dead

trees. Since this activity is along currently open roads, it would not elevate the disturbance level or mortality risk to caribou beyond baseline levels.

Noxious Weed Treatment – This ongoing activity takes place along roadsides and certain trails, also well away from any treatment areas. Since this activity is along some restricted roads, there may be a small amount of temporary disturbance to caribou beyond baseline levels. Additional mortality risk to caribou would be negligible.

Routine Trail Maintenance – Trail maintenance may take place in the vicinity of treatment areas at different times during project implementation. Since the caribou recovery area on the IPNF is almost completely overlapped by the designated Canada lynx recovery zone, trail maintenance in caribou habitat would be guided by standards set forth during informal consultation between USFS and USFWS regarding ongoing activities and existing projects within lynx habitat. Specifically, trail maintenance is not allowed in lynx denning stands before the end of the maternal denning period (July 1). This restriction affects late-successional and old-growth stands – many of the same stands that caribou would utilize for spring or summer habitat. As a result, trail maintenance restrictions in place to minimize disturbance to denning lynx would also limit potential disturbance to caribou during the spring/early summer time period.

Myrtle-Cascade FEIS Timber Sales – The ongoing Myrtle-Cascade FEIS Timber Sale units will impact only a small amount of acreage within the Myrtle CMU (USDA 2003b). No currently suitable *Key* habitat will be affected by these sales. Approximately 68 acres of *EWSF* will be impacted by Myrtle-Cascade Sales, causing a cumulative reduction of 883 acres (7.5% of capable *EWSF*) in Whitebark Pine project Alternative 2. Since there would be no measurable changes to suitable habitat in the Myrtle CMU under Alternatives 3 and 4, there would be no additional cumulative impacts from the Myrtle-Cascade Sales in these alternatives.

Timber Stand Improvement – With a small exception (<50 acres), all caribou habitat in the project area is within the Canada Lynx Recovery Zone. Thinning young, small diameter trees is not allowed in lynx habitat except under explicit circumstances (pruning, some brush removal, and weed-and-release prescriptions). Where this activity takes place in caribou habitat, it may cause a minor disturbance to caribou in adjacent mature timber, but would not cause changes to caribou habitat that would affect suitability.

Bonners Ferry Ranger District Small Sales EA - Standing and down dead timber provide no special habitat for woodland caribou. However, arboreal lichens on recently windthrown trees do provide important forage for caribou during early winter (Rominger and Oldemeyer 1989). Early winter is considered the most stressful time for woodland caribou due to increasing snow depths and diminishing palatable foods. The latter requires caribou to shift from a more nutritious shrub/forb/grass diet to arboreal lichens. The exclusion of all early winter caribou habitat in the Selkirk Mountains from salvage operations with this EIS would result in no impact on the ability of these areas to support woodland caribou during this critical time period. Open road densities would not change through implementation of this project. The maintenance of existing habitat and open road densities would continue to provide for caribou and their habitat. Therefore, this project would have no effect on caribou or their habitat.

(iv) Conclusion

EWCH, which is likely the most limiting seasonal habitat component for woodland caribou, would not be reduced by any of the action alternatives. Alternative 2 would modify substantial percentages of all other seasonal habitats, particularly in the Trout-Ball and Myrtle CMUs. As a result, Alternative 2 may cause unfavorable changes to woodland caribou habitat. Alternatives 3 and 4 would have considerably less influence on seasonal caribou habitats. These alternatives concentrate activities during the late summer and fall in open-canopied stands that mainly serve as late winter or spring/calving habitat. Because the treatment areas are on high, windswept ridges that do not produce significant quantities of forage, and there is temporal displacement between project activities and expected caribou use of treatment areas, these alternatives are unlikely to cause substantial effects to woodland caribou.

(v) Consistency with Forest Plan and Other Regulations

All action alternatives are consistent with the Forest Plan direction to manage the habitat of species listed under the Endangered Species Act (USDA Forest Service 1987 p. II-6). Regarding woodland caribou, all alternatives would maintain early winter cedar-hemlock habitat, provide a suitable mix of other seasonal habitat components, and not increase the risk of direct mortality.

C-2. CANADA LYNX

(i) Methodology

Canada lynx habitat was evaluated using a habitat suitability model derived from data in the Forest timber stand database (TSMRS). Modeling rules and assumptions can also be found in the project file. Since we lack adequate vegetation data on surrounding private lands, it is assumed that these lands make no contribution to lynx habitat, even though there may be suitable patches within these ownerships.

(ii) Effects Common To All Alternatives

As discussed previously, a substantial portion of the lower Myrtle Creek watershed was affected by a mixed-severity wildfire in the summer of 2003. Since the vegetative changes caused by this fire have not been accurately mapped, affected habitat will be considered unsuitable for analysis purposes.

The fire affected approximately 1,947 acres of the Myrtle-Cascade LAU, and perhaps three acres of the Snow LAU. Of these, 1,343 acres are capable lynx habitat, including 79 acres of early forage, 239 acres of denning habitat, and 1,024 acres of low quality forage. For simplicity of analysis, it is assumed that all 1,343 acres have been converted to an unsuitable condition. While this event may cause small changes in habitat percentages of the existing condition, only Alternative 2 proposes activities in this watershed. Similar to the woodland caribou discussion, Alternatives 3 and 4 would not be impacted by the fire from a cumulative effects standpoint.

Effects of Alternatives

Alternative 1

Direct and Indirect Effects

In the absence of mechanical treatments, lynx habitat conditions are unlikely to change significantly in these LAUs. Insects and disease would continue to cause tree mortality and would trigger increases in down woody material. More lynx denning habitat may be produced, and existing denning habitat would be enhanced. However, inspection of Table 4-10 illustrates that, with the exception of Cow LAU, denning habitat is not limiting in the area. To the contrary, high quality foraging habitat (and related prey availability) is more likely the factor that limits lynx occupation. This habitat component would be produced in small amounts by the action alternatives, but would not be measurably increased by Alternative 1. As a result, while lynx would enjoy improved denning opportunities with this alternative, it may contribute to further declines in the population density of their principal prey species.

The scenario described above assumes that there would be no stand-replacing fire in this area. Given the history of active fire suppression, existing high fuel loads in affected stands, and increasing fuel concentration that lack of management action would provide, the area may be affected by wildfire at some point in the future. The magnitude of this fire would depend upon area accessibility, available resources, weather and other environmental factors. Unlike the controlled burning proposed by this action, it would be difficult or impossible to contain wildfire within proposed unit boundaries where it would benefit whitebark pine and would not negatively affect other habitat components, such as denning stands. A mixed-severity fire is unlikely to alter large portions of available habitat, but a large stand-replacing fire would convert all affected stands to unsuitable habitat, which would take 20-30 years to mature to the point where they would then support high densities of snowshoe hares.

Alternative 2

Direct and Indirect Effects

Within the Ball LAU, approximately 974 acres would be affected by Alternative 2, about 345 acres of which are currently suitable denning habitat (Table 4-10). Treatments in this LAU would consist of slashing and burning the Ball Lakes, Burton Ridge and Russell Peak areas, and whitebark pine release in the Russell Ridge area. Given the nature of the treatments and irregular pattern of the slash/burn areas, it is expected that the post-treatment condition would provide enough lynx and hare cover to be considered “low quality forage” rather than “unsuitable”, although small areas of unsuitable habitat may result from treatment. An additional 321 acres could be affected in the secondary burn area, of which 45 acres are suitable denning habitat. Whitebark pine release treatment in the Russell Ridge area would consist of understory thinning of brush and other competing conifers on approximately 64 acres that burned in the mid-1970’s. This site is quite rocky, with intrinsic low stocking levels. As a result it is not presently, and is unlikely to develop into, high quality lynx foraging habitat. Arrangement of Alternative 2 treatment areas within individual LAUs is shown in Figure 4-5.

Table 4-10. Acres of lynx habitat impacted - Alternative 2 (primary burn areas only)

Lynx Analysis Unit (LAU)	Suitable Denning Acres / (%)	High Quality Forage Acres	Low Quality Forage Acres	Unsuitable Preforage Acres
Ball	345 / (2.4)	300	329	0
Cow	0	0	0	0
Long Parker	0	331	196	164
Myrtle Cascade	99 / (0.4)	532	888	0
Trout Fisher	133 / (1.3)	569	1311	65
Upper Smith	89 / (0.7)	55	146	0

The 974 treated acres represent 6.7% of the capable habitat in this LAU, with the secondary burn acres representing an additional 2.2%. Thus, even if treatments left these areas in an unsuitable condition, this LAU would remain well within the limits set forth in the LCAS for percent unsuitable and percent change to unsuitable over a ten-year period. Suitable denning would be reduced to 2,703 acres (18.6%) as a result of this alternative, with an additional 0.3% potential reduction in the secondary burn area.

Approximately 691 acres would be treated in the Long-Parker LAU in this alternative. This LAU includes all or portions of the Cutoff Peak, Long Canyon and Fisher Peak treatment areas. The Cutoff Peak area would be treated with a slash/burn prescription in an irregular pattern, and the Long Canyon area would be treated by a continuous pattern of burning only. The Fisher Peak area would be a whitebark pine release treatment. This area has a more recent fire history than most other treatment areas, one unit (#01 - 95 acres) having burned in the late 1940's or early 1950's, and the other (unit # 02 - approximately 230 acres) a result of the Fisher Peak Fire in 1994. Approximately 164 acres of the 1994 burn is within the Long-Parker LAU, and is modeled as currently unsuitable. The remainder of the Fisher Peak unit and the Cutoff Peak unit total some 250 acres within this LAU. Treatment would convert these acres to "low quality forage," although small unsuitable patches may result. The 164 previously burned acres in the Fisher Peak area would remain unsuitable. Because the Long Canyon area would be burned in a continuous pattern, the approximately 277 treated acres may become unsuitable. As a result, this LAU would experience an increase of as much as 0.9% (277 acres) of unsuitable habitat. The secondary burn area could potentially affect an additional 340 acres. There would be no loss of modeled denning habitat in the LAU as a result of Alternative 2, except perhaps one acre in the secondary burn area.

The broad classification of the Fisher Peak treatment unit as a subalpine fir habitat type made it initially appear this might be Canada lynx habitat. However, little if any of this area is capable of serving as lynx foraging habitat. Close examination of aerial photos reveals the area to be a patchy mosaic of different potential types, parts of which are not capable of supporting any significant tree density. Substantial areas are composed of rock, cliffs, talus slopes, alpine meadows, and high elevation shrub-fields. The areas capable of supporting trees are mostly open rocky slopes, where spaces between the trees can easily be seen on aerial photos. Trees

sometimes grow in small clumps, but there is substantial distance between the clumps. The moister areas in the small basins may potentially support somewhat larger trees, but generally have open and clumpy tree canopies with shrub understories. The Fisher Peak treatment unit is at the upper limits of the subalpine fir habitat type series, where growing season length, temperature, wind, and soil conditions all limit tree density. Like other areas in the Selkirks that currently support whitebark pine as the dominant species (the upper subalpine zone), environmental conditions in portions of the Fisher Peak treatment area are probably near the limits of the ecological amplitude of subalpine fir and Engelmann spruce. As a result, this area cannot support dense stands of these two species.

Due to the fragmented nature of vegetation in this stand, an “irregular” treatment is prescribed, and less than one-half of the 330 acres will actually be treated. Within this, approximately 10% of live conifer stems, along with a small amount of shrub cover, will be removed. Treatment of this magnitude provides a better opportunity for whitebark pine dominance, but is unlikely to noticeably alter the density of the stand, and subsequently would not significantly affect incidental snowshoe hare use. Based on this information, proposed treatments in the Fisher Peak treatment areas are consistent with LCAS guidelines. During consultation of this project under Section 7 of ESA, the USFWS concurred that treatment of this unit appears to be consistent with the LCAS; however, it was agreed that a field review with USFWS and IPNF personnel would occur prior to treatment of the Fisher Peak unit. If additional information indicates habitat conditions in the unit, or parts of the unit, are not as described, consultation will be reinitiated.

Treatments will affect approximately 1,519 acres of lynx habitat within the Myrtle-Cascade LAU, including 99 acres of modeled denning habitat. Treatments in this LAU consist of slashing and burning in an irregular pattern all or portions of the Burton Peak, Burton Ridge, Myrtle Peak and Myrtle Ridge areas. All 1,519 acres would be low quality forage after treatment. There would be a loss of denning habitat totaling approximately 36, 18, and 46 acres in the Burton Ridge, Burton Peak, and Myrtle Ridge areas, respectively. Post-treatment denning habitat would total 5,055 acres (20.9% of LAU). There would be a conversion of 532 acres of late-successional (high quality) forage to low quality forage. An additional 480 acres could be affected in the secondary burn area, including 84 acres of denning habitat. This represents an additional potential loss of 0.3% of capable denning habitat from project activities, along with a potential loss of 239 acres of denning habitat from the Myrtle Creek fire. The combination of Alternative 2 primary and secondary treatments, plus the Myrtle fire effects, could ultimately reduce denning by 422 acres – leaving the Myrtle-Cascade LAU with 19.6% denning.

The Trout-Fisher LAU contains the most proposed treatment acres of any LAU. Approximately 2,080 acres would be treated in this alternative, including 133 acres of modeled denning habitat. This LAU contains all or portions of the Fisher-Farnham, Trout Lake, Fisher Peak, and Ball Lakes areas. Treatments within this LAU would consist of irregular patterns of slash and burn in the Ball Lakes and Fisher-Farnham areas, and irregular whitebark pine release in the Fisher Peak and Trout Lake areas. All but four acres of the affected denning habitat are in the Fisher-Farnham area. Post-treatment denning habitat would total 2,230 acres (21.9% of LAU). There would be a conversion of 569 acres of late-successional (high quality) forage to low quality forage. An additional 433 acres could be affected in the secondary burn area, of which 85 acres are currently suitable denning habitat. This represents a potential reduction of an additional 0.8% of denning habitat. The 65 acres of affected lynx habitat in a preforage condition

corresponds to the remainder of the Fisher Peak burn of 1994. As discussed above, whitebark pine release in this area is unlikely to substantially impact future lynx foraging habitat. Vegetation in the Trout Lake treatment area was modified by a mixed-severity fire in the 1940's that left mature trees interspersed with patches of regenerating conifers, similar to the older burn in the Fisher Peak treatment area.

The Whitebark Pine project would treat approximately 290 acres within the Upper Smith LAU, of which 89 acres are modeled denning stands. Treatments within this LAU are contained in the Cutoff Peak area, and would be an irregular pattern of slash and burn. Denning would be reduced to 3,290 acres (25.0% of LAU), and 55 acres of late-successional (high quality) forage would be converted to low quality forage. An additional 81 acres could be affected in the secondary burn area, of which 12 acres (0.1%) are modeled denning habitat.

While the Cow LAU is within the Whitebark Pine project area, the closest treatment area (Cutoff Peak) is more than 1.3 miles from this LAU. Therefore, there would be no measurable effects to lynx habitat within the Cow LAU as a result of this proposal.

Figure 4-5. Alternative 2 Treatment Areas within Canada Lynx LAUs.

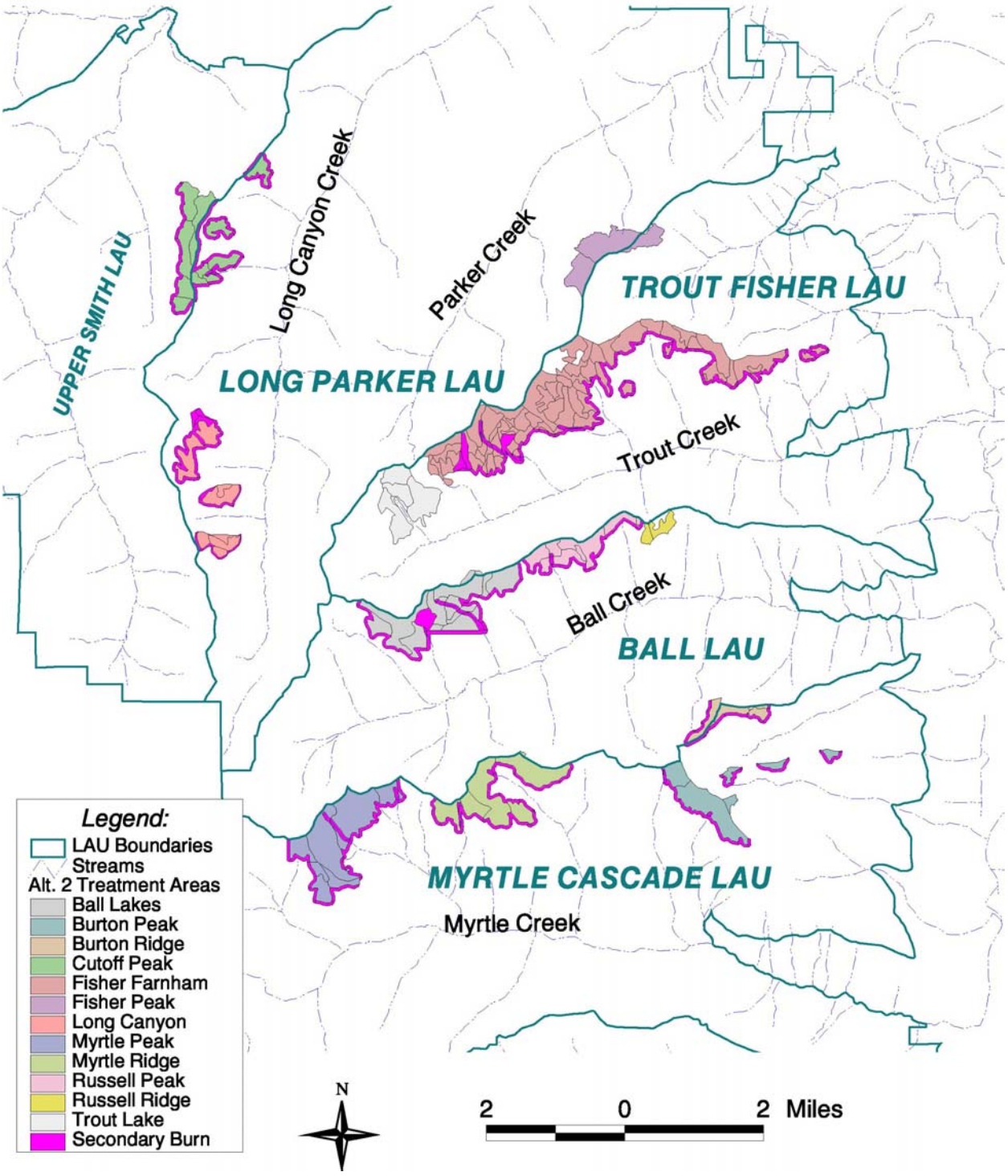
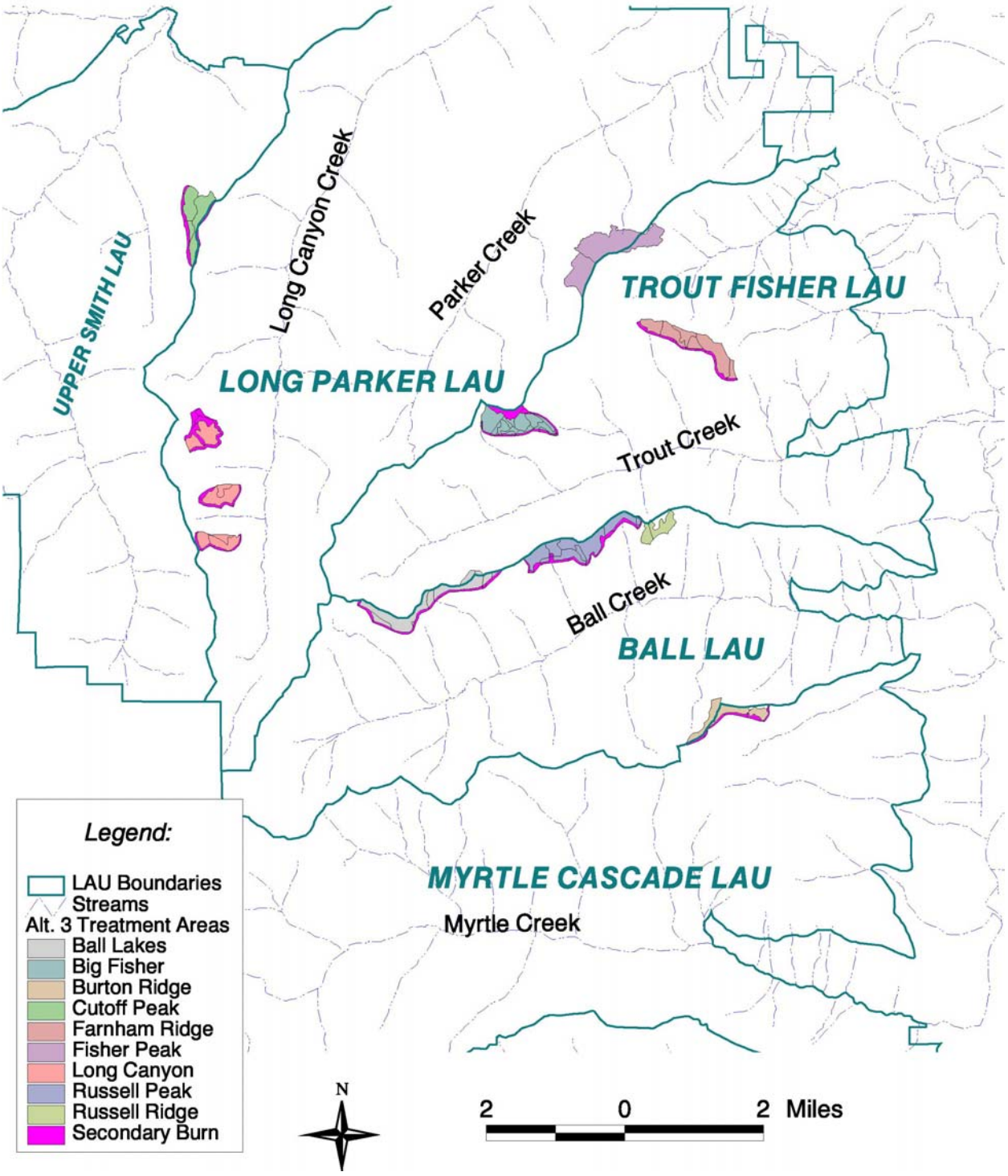


Figure 4-6. Alternative 3 Treatment Areas within Canada Lynx LAUs.



Alternatives 3 and 4

Direct and Indirect Effects

Several treatment areas have been dropped between Alternative 2 and Alternatives 3 & 4, including the Burton Peak, Myrtle Peak and Myrtle Ridge areas. In addition, the 1,634 acre Fisher-Farnham treatment area has been subdivided into the Farnham Ridge and Big Fisher treatment areas totaling 362 acres. All remaining proposed treatment areas are considerably reduced in acreage (Figure 4-6). Treatment area prescriptions and patterns for remaining areas would be the same as those reported for Alternative 2.

Table 4-11. Acres of lynx habitat impacted - Alternative 3 (primary treatment areas only).

Lynx Analysis Unit (LAU)	Suitable Denning Acres / (%)	High Quality Forage Acres	Low Quality Forage Acres	Unsuitable Preforage Acres
Ball	168 / (1.2)	172	184	0
Cow	0	0	0	0
Long Parker	0	137	171	164
Myrtle Cascade	36 / (0.1)	0	28	0
Trout Fisher	5 / (<0.1)	7	367	65
Upper Smith	77 / (0.6)	55	11	0

Table 4-12. Acres of lynx habitat impacted - Alternative 4 (primary treatment areas only).

Lynx Analysis Unit (LAU)	Suitable Denning Acres / (%)	High Quality Forage Acres	Low Quality Forage Acres	Unsuitable Preforage Acres
Ball	168 / (1.2)	172	184	0
Cow	0	0	0	0
Long Parker	0	0	95	164
Myrtle Cascade	36 / (0.1)	0	28	0
Trout Fisher	5 / (<0.1)	7	367	65
Upper Smith	77 / (0.6)	55	11	0

Alternatives 3 and 4 would treat approximately 524 acres of lynx habitat within the Ball LAU, 168 acres of which are currently suitable denning (Tables 4-11, 4-12). These alternatives include reduced acreage within the same treatment areas in this LAU as Alternative 2. Suitable denning habitat would be reduced to 2,880 acres (19.8%) as a result of this alternative. An additional 111 acres could potentially be affected in the secondary burn area, including 29 acres (0.2%) of denning.

In the Long-Parker LAU, approximately 472 acres would be treated in Alternative 3, while only 259 acres would be treated in Alternative 4. While the Cutoff Peak treatment area remains in both alternatives, these alternatives differ in that the Long Canyon treatment area would be dropped in Alternative 4. No denning habitat would be affected in either alternative. An additional 135 acres could potentially be affected in the secondary burn area in Alternative 3. Only 16 acres are in the secondary burn area in this LAU in Alternative 4.

Only about 64 acres would be treated in Alternatives 3 and 4 in the Myrtle-Cascade LAU, including approximately 36 acres of modeled denning habitat. In contrast to Alternative 2, only the Burton Ridge treatment area remains in this LAU. This LAU would experience a very small reduction in denning habitat (0.1%) as a result of this alternative. An additional 33 acres could be affected in the secondary burn area, of which approximately 7 acres are currently denning habitat. Assuming that denning habitat is lost in all primary and secondary treatment areas, as well as all areas affected by the Myrtle Creek fire, post-treatment denning in this LAU would be 20.1%.

The Trout-Fisher LAU includes the proposed Farnham Ridge and Big Fisher treatment areas, as well as portions of the proposed Fisher Peak and Ball Lakes areas. Treatments would be reduced to approximately 444 acres, of which only about 5 acres are modeled denning habitat. An additional 106 acres could be affected in the secondary burn area, including 20 acres of denning habitat.

Approximately 143 acres would be treated in Alternatives 3 & 4 in the Upper Smith LAU, all in the Cutoff Peak treatment area. This would cause a reduction of 77 acres of denning habitat, leaving the LAU with 3,302 acres (25.1%) of currently suitable denning. As in Alternative 2, 55 acres of late-successional (high quality) forage would be converted to low quality forage. An additional 30 acres could be affected in the secondary burn area, including 7 acres of denning habitat.

As with Alternative 2, there are no treatment areas within the Cow LAU in these alternatives; subsequently there would be no measurable effects to lynx habitat in this LAU as a result of Alternatives 3 and 4.

(iii) Cumulative Effects Common To All Alternatives

The following past, ongoing and reasonably foreseeable actions are considered relevant in a cumulative effects discussion for Canada lynx:

Firewood Gathering - This ongoing activity takes place along open road segments, well away from any proposed treatment areas. This activity is unlikely to alter vegetative characteristics in such a way as to change lynx habitat relationships. Since this activity is along currently open roads, it is unlikely to elevate the disturbance level or mortality risk to lynx beyond baseline levels.

Noxious Weed Treatment – This ongoing activity takes place along roadsides and certain trails, also well away from any treatment areas. Since this activity is along some restricted roads, there may be a small amount of temporary disturbance to lynx beyond baseline levels. Additional mortality risk to lynx would be negligible.

Routine Trail Maintenance – Trail maintenance may take place in the vicinity of treatment areas at different times during project implementation. Trail maintenance in lynx habitat is guided by standards set forth during informal consultation between USFS and USFWS regarding ongoing activities and existing projects within lynx habitat on the IPNF.

Myrtle-Cascade FEIS Timber Sales - In combination with past natural and human-caused events, these alternatives and the Mama-Cascade, Big Mack and Salt Lick sales will not alter lynx habitat conditions in such a way that they fail to meet the standards set forth in the LCAS.

Timber Stand Improvement – Silvicultural treatments regenerating stands (including white pine pruning, weed and release, and shrub control projects) may be implemented under the restrictions set forth during informal consultation between USFS and USFWS regarding ongoing activities and existing projects within lynx habitat on the IPNF.

Bonners Ferry Ranger District Small Sales EA - Potential salvage activities would not trigger incremental impacts as long as established design and mitigation measures are followed, including:

- No salvage of patches less than 5 acres in size, unless LAU has more than 10% well-distributed, field verified denning habitat
- In affected areas of more than 5 acres, a minimum of 5 acres or 10% affected area must remain unharvested, unless LAU has more than 10% well-distributed, field-verified denning habitat
- No salvage in LAUs with less than 10% modeled denning habitat.
- No salvage where activity would result in more than 30% of affected LAU(s) in currently unsuitable condition, or greater than 15% change to unsuitable in 10 year period.
- No salvage where actions will adversely affect movement of lynx along important connectivity corridors.

(iv) Conclusion

Alternatives 2, 3 and 4 would have an effect on existing lynx habitat, including the loss of modeled denning and high quality (late successional) foraging habitat. Alternative 4 would cause no increase in unsuitable habitat, while Alternative 3 would add 213 acres of unsuitable habitat and Alternative 2 would add 277 acres. Alternatives 3 and 4 would make incremental (<1%) changes to denning habitat, while Alternative 2 would result in considerably more impact on lynx. However, the proportions of lynx habitat components would continue to meet the standards set forth in the LCAS in all action alternatives.

Though all action alternatives may provide a temporary disturbance to resident lynx, it is extremely unlikely that this disturbance would result in lynx mortality. There will be no increase of open road miles in lynx habitat as a result of this action. Therefore, the action alternatives are unlikely to cause substantial deterioration of Canada lynx habitat.

(v) Consistency with Forest Plan and Other Regulations

Because Canada lynx was listed after the publication of the IPNF Forest Plan, there are no standards specific to this species. Instead, lynx habitat modification is guided by the LCAS and

by consultation between the USFWS and the IPNF regarding ongoing activities and existing projects within lynx habitat on the Forest. Lynx habitat conditions would continue to meet the standards set forth in the LCAS in all action alternatives. Therefore, the proposed alternatives are consistent with the LCAS.

C-3. GRIZZLY BEAR

(i) Methodology

The analysis of impacts to grizzly bears focuses on changes to security habitat, core habitat and road densities within each grizzly bear management unit (BMU). Security habitat is determined by buffering open roads, high use recreational sites, and off-road mechanized activities such as timber sales by ¼ mile (400 meters), and repetitively-used (more than five days/season) helicopter flight paths and helispots by ½ mile. Roads that are managed for restricted access and are gated or closed via guardrail barrier are not considered to reduce grizzly bear security habitat.

Grizzly bear core habitat includes areas that are outside of a 0.31 mile (500 m) influence zone of both open and restricted roads, railroads, and motorized trails. Open motorized route density (OMRD) and total motorized route density (TMRD) are calculated using the moving windows analysis described in Wakkinen & Kasworm (1997). OMRD calculations take account of open roads, railroads, motorized trails, and any road segments where the number of administrative trips exceeds allowable limits for any given season during the bear year (non-denning period). TMRD calculations take in these same routes as well as roads restricted by gates or guardrail barriers for the duration of the non-denning period. Roads closed by earthen barriers or roads that are physically impassable to motorized vehicles do not figure into density calculations.

At present, the IPNF does not have a vegetation-based grizzly bear habitat suitability model, so possible changes to vegetation will be addressed qualitatively. Habitat security and core habitat are reported as a percent of the BMU. Road densities are reported as the percent of the BMU having an OMRD >1 mile/mile^2 or TMRD >2 miles/mile^2.

The basis for the determination of cumulative effects on grizzly bear is the BMU. For the analyses of the effects of the Whitebark Pine restoration project, the cumulative effects areas used for grizzly bear are the Ball-Trout, Long-Smith, and Myrtle BMUs. The rationale for cumulative effects analysis for grizzly bears follows the guidance outlined in the IPNF Forest Plan, Appendix U (USDA 1987).

(ii) Effects of Alternatives

Alternative 1

Direct and Indirect Effects

If no action is taken, whitebark pine would continue to decline in density and area. As a result, this important seasonal food source would become increasingly less available to resident grizzly bears. While there would be less disturbance in grizzly bear habitat since there would be no

need for helicopter use or chainsaw work at higher elevations, this work creates an ephemeral point-source disturbance and extremely low risk of grizzly bear mortality. The declining food source, by contrast, represents a permanent deterioration of grizzly bear foraging habitat. If whitebark pine were to disappear from the local landscape, carrying capacity for grizzly bears may be reduced in affected BMUs due to forage limitations.

(iii) Effects Common to All Action Alternatives

There will be no changes to road densities (OMRD & TMRD) or core habitat as a result of these alternatives. Because of the remoteness of treatment areas, activities will create a potential temporary (2-3 weeks during implementation) disturbance to available core habitat in affected BMUs. This disturbance does ***not*** equate to core habitat ***loss***. Disturbance effects will be addressed by calculating the security loss (as a percent of each BMU) that various treatment areas would cause. Security losses, as addressed in this document, are not permanent, but only apply to the bear year in which the activity takes place. Percent security changes (loss) by alternative due to short-term disturbance in the treatment areas are given in Table 4-13. Regardless of which alternative is chosen, the combination of this activity and other ongoing activities would not be allowed to drop security below 70% in any affected BMU. The USFS assures that these standards are met through the annual planning process and consultation with USFWS on the yearly *Biological Assessment: Administrative Activities on Restricted Roads* (USDA 2003).

Alternative 2

Direct and Indirect Effects

Location of Alternative 2 treatment areas within BMUs is shown in Figure 4-7. Within the Ball-Trout BMU, approximately 11,484 acres of secure habitat may be impacted under Alternative 2. This cumulatively represents a 19.9% security loss if all areas were treated at once. Clearly, not all areas will be treated during the same bear year, but treatment areas will be scheduled in such a way that they receive attention as quickly as time, funding, and grizzly bear habitat standards allow. To calculate percent security for this BMU for a given year, merely subtract the percent security loss for active treatment areas from the baseline percentage (Table 4-13). So, if the Fisher-Farnham, Ball Lakes and Trout Lake treatment areas were all active during the same bear year, the resulting security for the Ball-Trout BMU would be 85 minus7.4 minus 3.3 minus 1.4 = 72.9% (assuming there were no other ongoing activities in this BMU that would impact security).

Closer scrutiny of Table 4-13 reveals a greater than 19.9% security loss if all treatment areas are summed. However, this assumes that all treatment areas are isolated, when in fact there is some security overlap between several treatment units. For example, if Russell Peak and Russell Ridge areas are treated in different years, the security loss would be 1.9% one year (Russell Peak) and 0.8% the other (Russell Ridge). If both areas were treated during the same bear year, the security loss would be only 2.5%, since there is a 0.2% security overlap between the two treatment areas (note that all security loss percentages are rounded to the nearest 0.1%). In other words, approximately 135 acres of the security buffer around Russell Peak are also contained in the security buffer around Russell Ridge. If these areas were treated in different years, the 135 acres would be counted toward security loss each year. If both areas

were treated simultaneously, the acreage would only be counted once. Similarly, there is a 0.2% security overlap between the Ball Lakes and Russell Peak areas, and a 0.1% overlap between the Burton Peak and Burton Ridge treatment areas.

Table 4-13. Resulting habitat effectiveness for the Bear Management Units.
Changes in percent security are due to short-term disturbance from saw crews completing slash preparation in the treatment areas.

Bear Management Unit (BMU)	Treatment Areas	% Security (Baseline)	% Security Loss		
			Alt. 2	Alt. 3	Alt. 4
Ball-Trout		***85***			
	Ball Lakes		3.3	2.0	2.0
	Burton Peak		1.0	1.3	1.3
	Burton Ridge		1.3	0	0
	Fisher-Farnham		7.4	*n/a*	*n/a*
	Farnham Ridge		*n/a*	1.6	1.6
	Big Fisher		*n/a*	1.3	1.3
	Fisher Peak		2.0	2.0	2.0
	Myrtle Peak		0.5	0	0
	Myrtle Ridge		0.8	0	0
	Russell Peak		1.9	1.8	1.8
	Russell Ridge		0.8	0.8	0.8
	Trout Peak		1.4	0	0
Long-Smith		***81***			
	Cutoff Peak		2.9	1.1	1.1
	Long Canyon		0[1]	0[1]	0
	Trout Lake		0.1	0	0
Myrtle		***70***[2]			
	Burton Peak		1.7	0	0
	Myrtle Peak		2.3	0	0
	Myrtle Ridge		2.0	0	0

[1]Since the Long Canyon treatment area is burn only (no slashing), there would be no security loss from treating this area.

[2]Baseline security for Myrtle BMU reflects ongoing activities from 2003 that would not be present during project implementation.

Figure 4-7. Alternative 2 Treatments within Bear Management Units

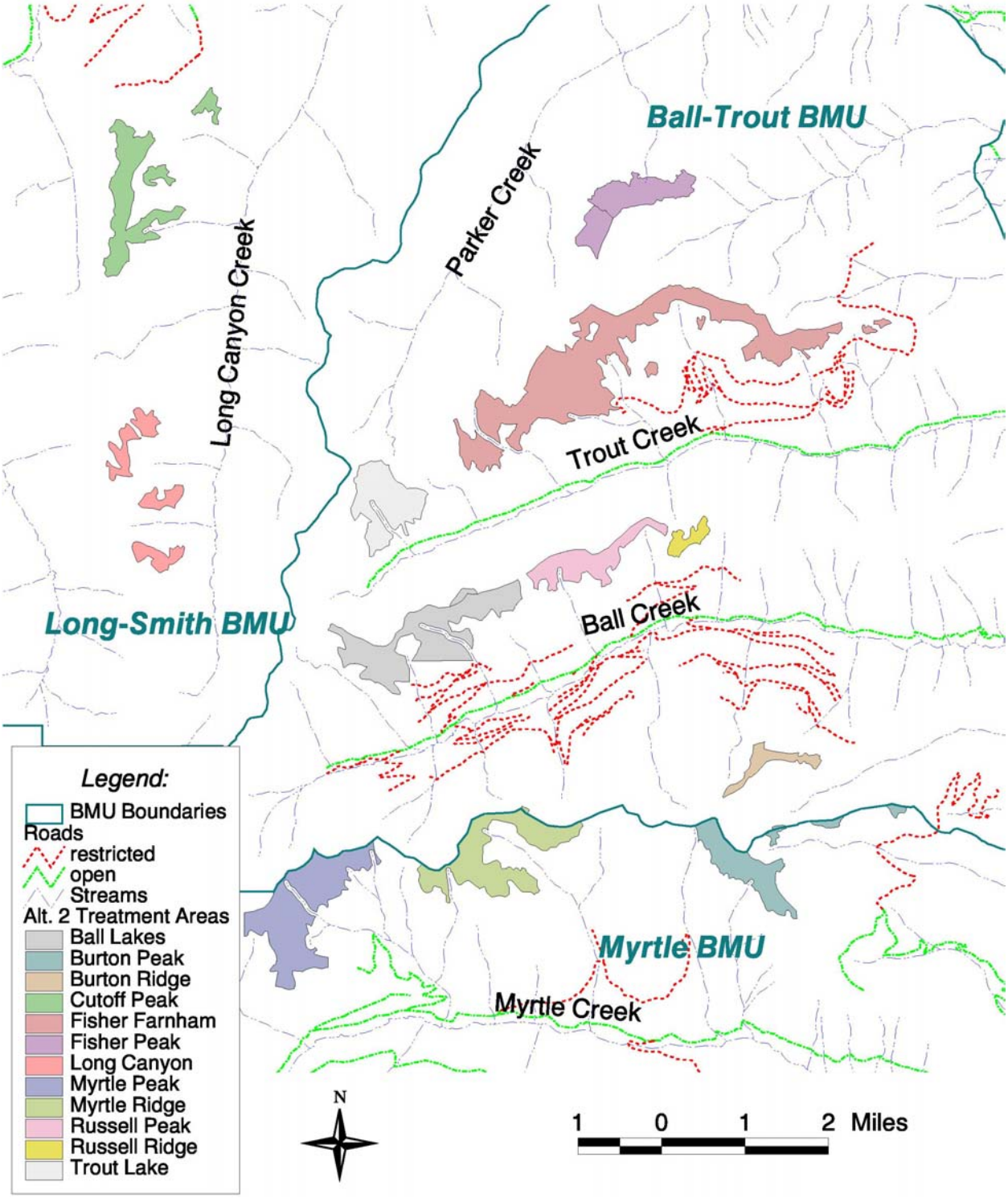
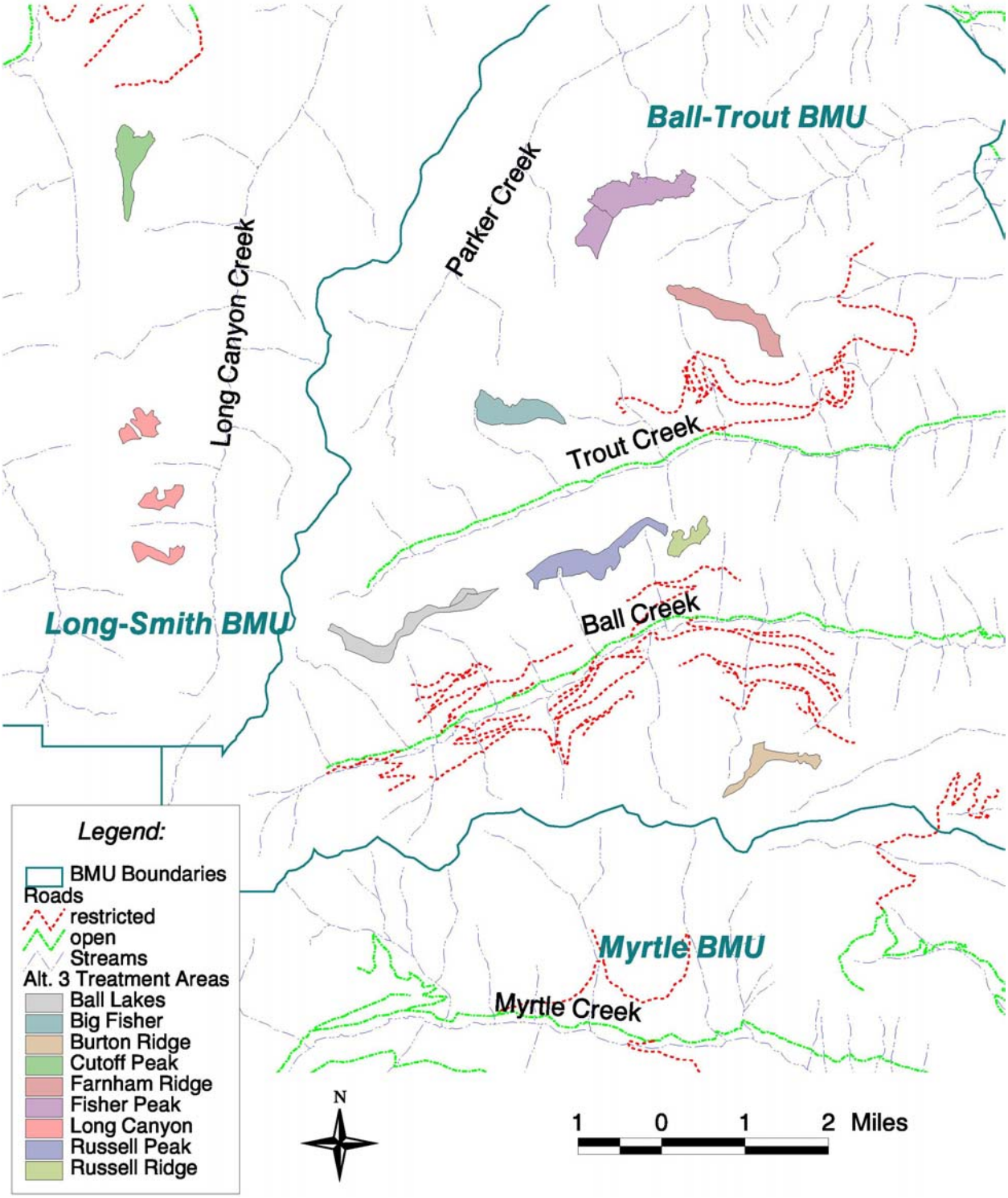


Figure 4-8. Alternative 3 Treatments within Bear Management Units



Approximately 1,938 acres of secure habitat would be affected by Alternative 2 in the Long-Smith BMU, representing a cumulative 3.0% security loss if all areas are treated during the same bear year. Since there would be no mechanical slashing (sawing) of the Long Canyon treatment area, there would be no security loss due to treatment.

Within the Myrtle BMU, approximately 3,877 acres would be treated in Alternative 2. This would bring about a 6% security loss in this BMU if all areas were treated during the same bear year. There is also a five acre security overlap between the Myrtle Peak and Myrtle Ridge treatment areas, representing 0.01% of the Myrtle BMU. For purposes of this analysis, this small overlap will be disregarded.

Presently, none of the Myrtle BMU treatment areas could be accommodated with the current security at 70%. However, the 70% figure represents the 2003 baseline condition, and reflects the activities taking place in this BMU during the 2003 bear year (USDA 2003). In future years, work in any of the treatment areas in this BMU would have to be coordinated with other ongoing activities in order to keep security at or above 70%.

Alternatives 3 and 4

Direct and Indirect Effects

Alternatives 3 and 4 would treat fewer acres than Alternative 2, and subsequently would cause less disturbance and fewer acres of security loss. Within the Ball-Trout BMU, approximately 5,986 acres of secure habitat would be impacted by these alternatives. This cumulatively adds up to 10.5% security loss in this BMU if all areas were treated simultaneously. Once again, there is a 0.2% security overlap between the Russell Peak and Russell Ridge treatment areas. Since the Burton Ridge treatment area is dropped in these alternatives, there is no security overlap between Burton Peak and Burton Ridge areas. The reduction in treatment area size also shrinks the security overlap between Ball Lakes and Russell Peak areas to a mere five acres (0.03% of Ball-Trout BMU), which will be disregarded for this analysis. A notable change from Alternative 2 is that the Fisher-Farnham treatment area is split into two much smaller treatment areas: Big Fisher and Farnham Ridge (Figure 4-8).

Approximately 715 acres of security habitat would be affected in the Long-Smith BMU, representing a 1.1% security loss. Since the Long Canyon treatment area would be treated by burning only (no mechanical treatment), there would be no security loss due to treatment. As a result, Alternatives 3 and 4 are virtually identical with respect to their impact on grizzly bear.

While the Myrtle BMU is within the project area boundary, there would be no treatment areas within this BMU, and it is outside the zone of influence of treatment areas in adjacent BMUs.

(iv) Cumulative Effects Common to All Alternatives

The following past, ongoing and reasonably foreseeable actions are considered relevant in a cumulative effects discussion for grizzly bear:

Firewood Gathering - This ongoing activity takes place along open road segments, well away from any proposed treatment areas. This activity is unlikely to alter vegetative characteristics in

such a way as to change grizzly habitat. Since this activity is along currently open roads, it will not elevate the disturbance level or mortality risk to grizzly bears beyond baseline levels.

Noxious Weed Treatment – This ongoing activity takes place along roadsides and certain trails, also well away from any treatment areas. Since this activity is along some restricted roads, there may be a small amount of temporary disturbance to bears beyond baseline levels. However, travel along restricted roads for weed treatment purposes would not elevate use of these roads beyond administrative use guidelines. There would be an insignificant mortality risk to grizzly bears resulting from this activity.

Routine Trail Maintenance – Trail maintenance may take place in the vicinity of treatment areas at different times during project implementation. By agreement with USFWS, routine trail maintenance - including occasional chainsaw use – is considered part of the environmental baseline for grizzly bears. This activity results in only temporary minor disturbance, and negligible mortality risk for bears.

Myrtle-Cascade FEIS Timber Sales - The ongoing Mama Cascade, Big Mack and Salt Lick timber sales would reduce security and increase OMRD in the Myrtle BMU during the bear year(s) in which they are implemented. Whitebark pine restoration activities within the Myrtle BMU would have to be coordinated with these sales to assure that security does not drop below 70%, and OMRD does not exceed the agreed upon standard, in any given year.

Timber Stand Improvement - Thinning young, small diameter trees would be designed to increase the overall health and vigor of the stands. While this activity may cause a minor disturbance to grizzly bears in the short-term, there would be no long-term effects. Since off-road mechanized equipment (power saws) is involved, thinning units are buffered by ¼ mile for grizzly bear security calculations. As with timber harvest activities, whitebark pine restoration activities within any BMU would have to be coordinated with thinning projects and other ongoing activities to assure that security does not drop below 70% in any given year.

Bonners Ferry Ranger District Small Sales EA - Future salvage would not cause impacts to forest structure that would alter grizzly bear habitat. These activities would take place within the 400 m disturbance buffer along open roads, or would create a similar buffer along restricted roads. As with other harvest activities, whitebark pine restoration activities within any BMU would have to be coordinated with small salvage sales and other ongoing activities to assure that security and OMRD do not drop below established standards in any given year.

(v) Conclusion

Alternatives 2 , 3 and 4 may temporarily disturb grizzly bears while sawing and burning activities are taking place. However, these alternatives would enhance foraging opportunities in the future, both in the short term (increased berry production in openings) and in the long term (enhanced production of whitebark pine seeds). There will be no increase of OMRD or TMRD, or loss of core habitat in any BMU as a result of any alternative. Forest plan security will not drop below 70% in any BMU during implementation of this project. As a result, this project may have short-term (during project implementation) negative impacts upon grizzly bear (due to disturbance), but would provide a long-term benefit to this species by enhancing production of a nutritious food source.

(vi) Consistency with Forest Plan and Other Regulations

All action alternatives are consistent with the Forest Plan direction to manage the habitat of species listed under the Endangered Species Act (USDA 1987 p. II-6). Specifically, grizzly security would be maintained at or above 70% of all affected BMUs. Core habitat and road densities would continue to meet BMU-specific standards agreed upon by the Forest Service and USFWS and outlined in USDI (2004).

C-4. Sensitive Species

BLACK-BACKED WOODPECKER

(i) Methodology

The potential effects on the black-backed woodpecker and other snag dependent species were determined by estimating the change in distribution and quantity of snag habitat that would result from implementation of alternatives.

(ii) Effects of Alternatives

Alternative 1

Direct and Indirect Effects

No immediate changes in snag habitat would occur as a result of implementing this alternative. Habitat conditions would change according to natural events over time. As a healthy forest matures, some trees die from competition and other natural forces, resulting in higher quality and quantity of snags. Consequently, nesting and foraging habitat would be improved for snag dependent species in healthy stands.

Tree mortality would continue to provide an abundance of nesting and foraging habitat for some species. Because black-backed woodpeckers are nearly restricted to post-fire habitat, their populations would remain at low endemic levels. However, high fuel accumulations resulting from elevated tree densities would lead to a higher risk of fires, increasing the chance of stand-replacing fires. If a stand-replacing fire were to occur, it would create a temporary flush of habitat for black-backed woodpeckers.

Black-backed woodpeckers have been described primarily as a post-fire obligate species--a species dependent upon habitat that results from a mixed lethal or stand-replacement fire that produces an abundance of snags. Interrupting the periodic disturbances created by lethal wildfires through continued fire suppression may threaten local populations of black-backed woodpeckers. Conversely, if a wildfire occurs in the project area that could not be suppressed, habitat may be enhanced.

While Alternative 1 does not alter existing conditions, the abnormal levels of fuels from years of fire suppression have altered historic fire regimes, resulting in possible catastrophic losses of

potential habitat. Consequently, Alternative 1 may impact individuals or habitat, but would not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or the species.

Alternative 2

Direct and Indirect Effects

No snags would be intentionally removed in treatment areas unless they present a safety hazard to saw crews. Since areas would be treated in an irregular pattern, snags could potentially be removed on as many as half of approximately 4,800 acres in Alternative 2 primary treatment areas during the burning phase of slash/burn or burn only treatments (whitebark pine release treatments would not measurably reduce snag densities, since no burning would take place). However, it is unlikely that these treatments would result in appreciable reductions in snag densities. While some snags may be lost through burning, it is likely that many more snags will be created than are lost. Slashing and intentional burning would occur in 2-5 acre patches scattered throughout treatment areas, but fire is expected to affect – and create snags in – portions of the untreated patches interspersed throughout treatment areas. In addition, any of the up to 1,700 acres of secondary burn areas that are affected would experience a net gain in small diameter snags. In all likelihood, this alternative would result in a net increase of snags across the project area.

Areas outside of proposed treatment areas would continue to be susceptible to insect and disease, thereby perpetuating small to medium sized snag habitat for black-backed woodpeckers. Annual Forest Health Protection (USFS) aerial surveys provide further evidence that mortality rates, due to insect and disease occurrences, are increasing. From 1992-2001 the level of bark beetle infestations increased from just over 5,000 acres to over 45,000 acres. This higher rate of mortality is due to increasing mountain pine beetle in pine species, Douglas-fir beetle in Douglas-fir, fir engravers in grand fir and western balsam bark beetle populations in subalpine fir. This pattern is especially apparent in the upper subalpine zone, where whitebark pine stands have sustained high levels of insect-caused mortality in recent years (see Chapter 1).

Additionally, this alternative is unlikely to affect “source” habitat, which Wisdom et al. (2000) define as a combination of old forests, young forest stages of lodgepole pine, and burned forests or forests with large scale insect infestations. Source habitats are areas that contribute to a stationary or positive population growth for a species in a specified area and time. Areas of dense young spruce/fir stands are expected to burn relatively hot, since they would have heavy fuel loads on the ground once saw work is completed. Conversely, areas of high snag densities would only be lightly burned, since there would be only sparse ground fuels to carry fire in these portions of treatment areas. As a result, any potential source habitats in treatment areas (e.g. – areas with elevated insect-caused mortality) are unlikely to be appreciably affected.

Alternatives 3 and 4

Direct and Indirect Effects

Similar to Alternative 2, these alternatives could potentially reduce snag densities on approximately half of the primary treatment area acres (~1,250 acres in Alternative 3, ~1,050 acres in Alternative 4), although this is unlikely for the reasons expressed above. These alternatives are also expected to increase small snag densities on as many as 415 acres or 300 acres of secondary burn areas in Alternative 3 and 4, respectively. These alternatives would affect less than one-third as many acres as Alternative 2. As a result, fewer of snags would potentially be lost by burning, and, conversely, fewer snags would also be created through fire.

(iii) Cumulative Effects Common to All Alternatives

The following past, ongoing and reasonably foreseeable actions are considered relevant in a cumulative effects discussion for black-backed woodpecker:

Firewood Gathering is anticipated to continue along seasonal and yearlong open roads. This activity has the potential to reduce snags within ~50 meters of open roads. However, the proposed action would not increase road densities, either during or following project implementation. Additionally, this activity is unlikely to reduce dense stands of small-diameter, hard snags that this species prefers for foraging.

Noxious Weed Treatment – This ongoing activity takes place along roadsides and certain trails, well away from any treatment areas. Since this activity will not result in tree mortality, it is unlikely that there would be additional impacts to black-backed woodpeckers.

Routine Trail Maintenance – Trail maintenance may take place in the vicinity of treatment areas at different times during project implementation. This activity may remove individual snags along trails that are deemed a hazard to work crews or recreationists, but the overall effect of this activity on snag densities across the landscape would be negligible.

Myrtle-Cascade FEIS Timber Sales - The ongoing Mama Cascade, Big Mack and Salt Lick timber sales would likely reduce small snag densities within treatment areas. However, the Myrtle Creek Fire of 2003 has produced over 3,000 acres of various diameter snags that were not present when the environmental baseline was established. Given the large increase in available habitat, the loss of a relatively small number of snags and live trees would not produce a measurable impact upon black-backed woodpeckers.

Timber Stand Improvement - Thinning young, small diameter trees would be designed to increase the overall health and vigor of the stands. Consequently, timber stand improvement activities could potentially retard development of preferred black-backed woodpecker habitat by creating stands that are more resistant to disease or insect outbreaks, and less likely to be affected by stand-replacing wildfire.

Bonners Ferry Ranger District Small Sales EA – Future salvage opportunities could cause some incremental impacts to snag habitat. However, salvage opportunities would be confined to past and proposed treatment areas, and areas within 1,200’ of existing roads. While future salvage may reduce snag densities on as many as 8,000 acres in the project area, snag habitat would continue to be created faster than it is lost both on a District-wide basis and across the project area (see Alternative 2 discussion, above).

(iv) Conclusion

Although these alternatives may somewhat reduce snag densities in treated areas, it is likely that snag densities will increase as a result of burning in and around treatment areas. In addition, USFS data indicate that the high rate of insect-caused tree mortality is creating snags Forest-wide at a greater rate than they are lost, allowing black-backed woodpeckers to maintain populations at low endemic levels. As a result, this proposal *may impact black-backed woodpecker individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*

(v) Consistency with Forest Plan and Other Regulations

All proposed alternatives would meet and exceed Forest Plan goals/objectives for managing snag habitat (Forest Plan Appendix X). Also, all action alternatives are consistent with the Forest Plan direction 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). Therefore, these actions would also be consistent with the National Forest Management Act requirements for population viability (CFR 219.19).

4.6 Water Resources and Aquatics Habitat

A. Methodology

The factors affecting increased runoff and erosion were assessed qualitatively to evaluate the potential for increased sediment production and delivery to the stream channels. Potential increases in runoff and erosion due to specific management activities were considered in order to determine the likelihood that sediment would be produced during a management activity and delivered to the stream channel.

B. Issue Indicators

To determine how well the alternatives would meet the purpose and need and to compare alternatives, the probability of increased runoff, erosion, and sediment delivery was evaluated. The qualitative analysis of direct and indirect effects is based on how the various components of the project (e.g., location, size, treatment method, presence of sensitive landtypes, etc.) are expected to affect the creeks within the analysis area.

The following issue indicators were used in the qualitative evaluation:

Location and Size (percent watershed treated)

The distance between the treatment area (potential sediment source) and the receptive stream channel or riparian area affects the amount of sediment that may be delivered to the channel. On steeper slopes, management activities may also impact slope stability, increasing the potential of sediment delivery to the stream channels.

Treatment method

The percent reduction in canopy cover or stems per acre affects the degree to which increased runoff and erosion may occur on the treatment site. The degree of soil compaction and the infiltration capacity of a soil, both of which may influence runoff and erosion, are affected by the type of treatment used.

Activity on sensitive landtypes within treatment area

The sensitivity of a landtype is determined by surface and subsurface erosion hazard, mass erosion potential, and sediment delivery potential. Sensitive landtypes, as defined for this project, are more susceptible to mass failure and surface erosion. The presence of a sensitive landtype does not preclude active management of the area, but when management activities are planned in areas with sensitive landtypes, more careful planning and use of mitigation measures or restoration is sometimes needed to avoid or reduce resource impacts.

Issue Indicator Not Analyzed:

Watershed responses to rain-on-snow events

Changes in forest vegetation resulting from management or natural events can affect the frequency and magnitude of rain-on-snow events (Harr 1986). Rain-on-snow events occur within the 3,000 to 4,500-foot elevation range during the winter months. Rain-on-snow is a natural process that can generate high to extreme peak flows, but not on an annual basis. Since rain-on-snow events generally occur between 3000 and 4500' in elevation and all treatment areas are located well above 4500' in elevation, rain-on-snow events do not pose a risk for any of the treatment areas for this project. Therefore, rain-on-snow is not an issue indicator in this analysis.

Water yield

For all action alternatives, due to the design of the prescriptions and the percent of the total watershed actually treated, any potential increase in water yield would not be quantifiable and there would be no measurable effect in the duration and intensity of peak flows (see aquatics project file). Therefore, the project would have no direct, indirect, or cumulative effects on water yield from implementation of this project. Therefore, water yield was not used as an indicator to measure effects on aquatic resources.

C. Direct and Indirect Effects:

C-1. Effects of Alternative 1 (No Action):

Under the no action alternative, there would be no change in the current management direction or intensity. Therefore, there would be no immediate measurable change in runoff, erosion, or sediment delivery potential. Slope stability would remain unchanged. No direct or indirect effects to aquatic resources would occur in this alternative. There would not be any effects to fish habitat.

C-2. Effects Common to Alternatives 2-4:

Location and Size of Treatment Areas

Treatments are generally located on ridgetops and some portion of the upper valley slopes, with elevations ranging from 5200 feet at the lowest, to over 7400 feet on the peaks and ridgetops. Slopes range from 5 to 100 percent within the treatment areas, with an average slope of 40 percent. The treatment areas are small when compared to the area of the watershed.

Table 4-14. Treatment Area as Percentage of Watershed Area.

Treatment Area	Acres	Watershed	Watershed Acres	Treatment as % of Watershed
Burton Peak	438	Myrtle Creek	27456	1.6
Cutoff Peak	243	Long Canyon	19392	1.3
Cutoff Peak	451	Smith Creek	45824	1.0
Fisher Peak	334	Parker Creek	10496	3.2
Fisher Farnham	2113	Trout Creek	12480	16.9
Long Canyon	452	Long Canyon	19392	2.3
Myrtle Peak	801	Myrtle Creek	27456	2.9

Treatment Area	Acres	Watershed	Watershed Acres	Treatment as % of Watershed
Myrtle Ridge	656	Myrtle Creek	27456	2.4
Russell Peak	350	Ball Creek	17152	2.0
Russell Ridge	64	Ball Creek	17152	0.4
Trout Lake	351	Trout Creek	12480	2.8

Treatment acres and watershed acres are approximate.

Treatment Methods

The treatments would consist of variations of three whitebark pine treatments - release, slash and burn, and burn only. The release, and slash and burn treatments would take place in all three action alternatives. The "burn only" treatment is planned in Alternatives 2 and 3. A description of the different treatments and their anticipated effects on aquatic resources are described below. These effects of each treatment type would be the same regardless of the alternative in which it would be used.

Whitebark Pine Release - This treatment involves mechanized (chainsaw) removal of 10 to 25% of the canopy cover within whitebark pine (WBP) stands. In all treatment areas, except Russell Ridge, approximately 20 to 50% of the acres in the area would be treated. On Russell Ridge, all of the alternatives would treat 100% of the 64-acre treatment unit. Overall, this would result in an irregular and discontinuous pattern of thinning across the treatment areas. No burning would be done in conjunction with the release cutting. Since no heavy machinery would be used, no disturbance to soils or decrease in organic ground cover would occur, so no changes in soil compaction or increases in runoff or sediment production for this treatment are expected. This treatment would have no direct or indirect effects on aquatic resources.

Slash and Burn - This treatment would result in a 10 to 25% decrease in stem density in up to 50% of the treatment area. The slash created during this treatment would provide a fuel bed sufficient to conduct low intensity, short duration prescribed burns in the treatment area. The pattern of disturbance would be irregular and discontinuous within the treatment areas. Design features require that burning is conducted during times of sufficient soil moisture (surface soil moisture of greater than 25%), so no effects to soil structure (i.e. development of hydrophobic soil) is expected. No heavy machinery would be used and no fire line would be constructed for this treatment. Therefore, no increase in channel densities, no soil compaction, or changes in soil structure are expected to occur. Beschta, RL (Walstad et al., 1990) found that after low severity burning, much of the organic matter comprising the forest floor remains. When burns are of a low severity, the effects of prescribed burning would have little impact on water yields or water quality. Given the small percentage of the watersheds being treated, prescriptions and location of the proposed units, this treatment would have no direct or indirect effects on aquatic resources.

Burn Only - This treatment would be applied in Alternatives 2 and 3 and would be conducted in a limited number of stands in the Long Canyon drainage. No slashing would occur in these areas and no fire line would be constructed. Design features require that burning is conducted during times of sufficient soil moisture (surface soil moisture of greater than 25%), so no effects to soil structure (i.e. development of hydrophobic soil) is expected. Since no slashing would be

done to dry out the proposed burn sites, a more intense ignition system, such as helitorching, would need to be used. Prescribed fire in these unslashed, wetter areas would most likely result in a patchy and discontinuous burn pattern, with potential small areas of high intensity fire (see Vegetation and Fire, Environmental Consequences). Beschta, RL (Walstad et al., 1990) found that low severity burns and providing buffers along stream channels minimize potential adverse effects caused by increased sediment production and delivery. Given the location of the proposed units and lack of stream channels in the immediate vicinity, this treatment would have no direct or indirect effects on aquatic resources.

Potential for Escaped Fire: As explained below, the potential for escaped fire, or high intensity burning is low for both the slash and burn, and burn only treatments (see Vegetation and Fire, Environmental Consequences).

Although no firelines will be constructed, the proposed units are situated along natural fuel breaks, primarily rock outcrops on the flanks and rocky ridges on the tops, which would stop the advance of the burns outside of the planned ignition areas. The uncontained lower edge of the prescribed burns would back very slowly down the slope, with primarily smoldering, creeping hotspots (see pages 4-3 through 4-5 Direct and Indirect Effects to Forest Structure). These backing fires would burn into stands characterized by closed canopies, compact litter layers, and occasional concentrations of heavy fuel (Fuel Models 8 and 10). See Table 4-1 on page 4-6 for BEHAVE Model Outputs and respective rates of spread, fireline intensities, and flame lengths for applicable Fuel Models during the peak burn time. Unslashed timber stands, in conjunction with high relative humidity and low temperature that typically occur during early fall in northern Idaho at these elevations would also limit fire intensity and rate of spread.

A low intensity, understory, backing burn with occasional torching is expected. Fire intensity and continuity of the burn area would be even lower in the “burn only” treatments in Alternatives 2 and 3. Given this expected fire behavior, no adverse effects to soil structure (such as creation of hydrophobic soils) are expected. Any sediment produced would occur only in the small patches of torching or higher intensity burn areas. These areas would be well buffered by surrounding unburned or lightly burned fuels, which would effectively limit the movement of soil particles off-site.

Potential for Fire in RHCAs: Given the location of the proposed units (described above) and lack of stream channels in the immediate vicinity, the risk of any fires burning into the RHCAs is very low. Therefore, there would be no measurable direct or indirect effects to aquatic resources from fire activities in any of the three alternatives.

Activity on sensitive landtypes within treatment area:

Four landtypes designated as “sensitive” are found within the treatments. **Landtype 103** is located in narrow valley bottoms and adjacent toe slopes, within an elevation range of 1840 and 5400 feet. It is rated as sensitive due to its sediment delivery potential given its proximity to stream channels. It is generally found within the riparian zones and extending 100 to 200 feet on either side of the stream channel. One small section of landtype 103 in the Lost Creek watershed occurs within the Burton Peak treatment unit planned in Alternative 2. Table 4-15 shows that sensitive landtypes make up only 0.2% of the Burton Peak treatment unit. Required INFS (1995) buffers protect this section. (More information is located in the preceding

discussions on potential for escaped fire and potential for fire in RHCAs.) Therefore, no activity would occur on this sensitive landtype.

Table 4-15. Percent Sensitive Landtype Within Each Treatment Area.

Treatment Unit	Proposed Treatment	Percent Sensitive Landtypes within each Treatment Area		
		ALT 2	ALT 3	ALT 4
Burton Peak	Slash/Burn	0.2	n/a	n/a
Cutoff Peak	Slash/Burn	0.5	n/a	n/a
Fisher Peak	WBP Release	2.2	2.2	2.3
Fisher Farnham	Slash/Burn	0.1	n/a	n/a
Long Canyon	Burn Only	5.9	8.1	n/a
Myrtle Peak	Slash/Burn	10.4	n/a	n/a
Myrtle Ridge	Slash/Burn	3.8	n/a	n/a
Russell Peak	Slash/Burn	0.1	0.1	0.1
Russell Ridge	WBP Release	4.3	4.3	4.3
Trout Lake	WBP Release	1.8	n/a	n/a

Landtype 180 is found within the Parker Creek and Trout Creek watersheds. Some sections of 180 are located in the Fisher Peak, Fisher, and Trout Lake treatment units in Alternatives 2, 3, and 4 and are located on the very edge of the treatment unit on steep slopes. Table 4-15 shows that the sensitive landtypes within the above treatment areas area are at most 2.2% of the treatment area. This landtype is generally located between 3200 and 7600 feet in elevation within avalanche chutes or rock fields. Therefore, the mass failure potential and the sediment delivery potential for these landtypes are high.

The main type of vegetation associated with this landtype is shrubs and forbs or no vegetation. Since no whitebark pine is found on these landtypes, and they are located on steep slopes on the edge of the treatment units, these areas of sensitive landtype 180 would not be targeted for slash and burn treatment, although some fire may move through these areas during the burning phase of the treatment. Given the small percentage of this sensitive landtype within the treatment areas and the expected fire behavior described above, no major slope destabilization is expected to occur. Therefore, no effects to aquatic resources are expected due to management activities on this sensitive landtype (180).

One small section of **landtype 332** is found within the Long Canyon Creek watershed in a treatment unit planned in Alternatives 2 and 3. This landtypes makes up less than 10% of the treatment area (see Table 4-15). It is located in the headwaters of a tributary to Long Canyon Creek and is partially protected by INFS buffers. This unit is planned for the “burn only” treatment. The area of sensitive landtype is located at the bottom of the treatment unit (i.e. on the downslope perimeter). Any active fire would most likely reach this area by backing downslope from the ignition source. The burn pattern would be patchy and the fire intensity would be low. Any increased erosion due to burning would be short-lived and the INFS buffer would filter any sediment before reaching the channel. No effects to aquatic resources are expected due to burning on this sensitive landtype.

Landtype 334 is predominately within the Myrtle Peak and Myrtle Ridge treatment units that are planned in Alternative 2. These units are located within the Myrtle Creek watershed. This landtype is associated with moderately to deeply incised draws on glaciated mountain sideslopes at elevations ranging between 5200 and 7200 feet. Soils associated with this landtype are volcanic ash influenced loess overlying glacial till. The mass failure potential and sediment delivery potential are high for this landtype. The slash and burn treatment is planned for these treatment units. The expected burn pattern in this area would be patchy and the fire intensity would be low. Areas of intense burning on this sensitive landtype may create conditions favorable for the increased erosion. The expansion of the stream buffers should be extended to a break in slope in drainages in which landtype 334 occurs in order to ensure the stream channel would not be affected. Given the implementation of this design feature, in conjunction with the other design features, no direct or indirect effects of this treatment are expected to occur.

Nutrients

After fire, nutrients can be carried to a stream channel in two main pathways; through transportation of sediment (mainly phosphorus) or through leaching (nitrogen). The potential for transport of nutrients through these two pathways depends on the amount of organic matter and plant biomass removed from the soil surface. While some studies have shown changes in the water chemistry of mountain streams after fire, most studies “show relatively small increases, if any, in nutrient concentrations and export following fire” (Tiedemann et al. 1979, Richter et al. 1982 in Bestcha, RL, 1990). It has been shown that the discontinuous and irregular burn pattern, the expected low intensity fire, and the design criteria that would be incorporated into this project would not result in measurable increases in sediment production or delivery to stream channels (Beschta, 1990). Therefore, nutrient delivery to the stream channel would not occur via this pathway. The low intensity fire should also leave enough organic material on the ground and enough live vegetation for continued uptake of nutrients from the soil, so the leaching of nutrients would not increase (Beschta, 1990). No increases in nutrients in the streams are expected due to the proposed treatments. Therefore, no direct or indirect effects to aquatic resources are expected.

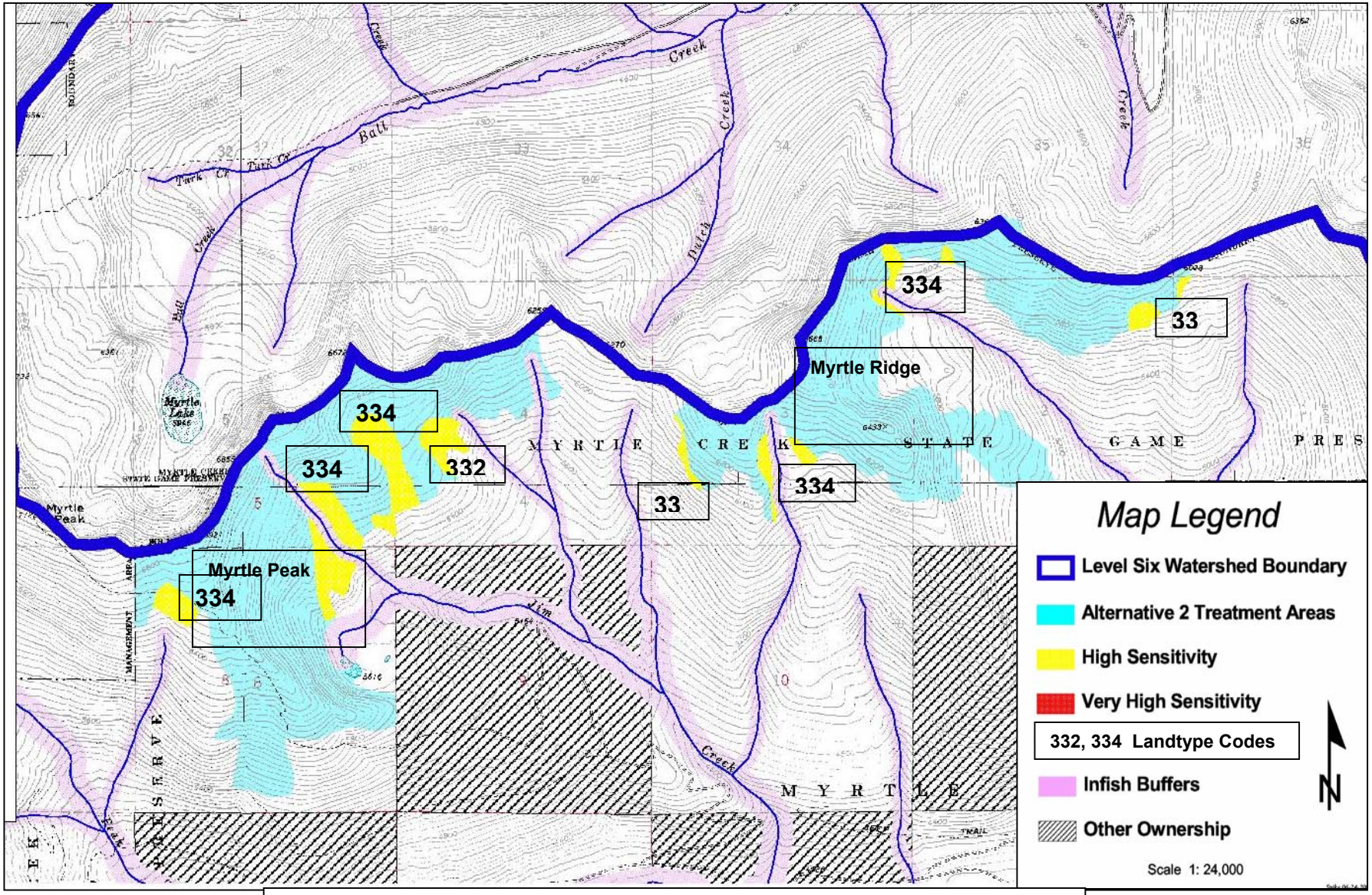


Figure 4-9. Myrtle Creek Watershed Sensitive Landtypes and Alternative 2 Treatment Areas

D. Fisheries Direct and Indirect Effects

Based on the watershed analysis and the lack of direct and indirect effects to fish habitat parameters, as described above, there would be no effects to the fisheries in the project area.

D-1. Analysis of Cumulative Effects:

A cumulative effects analysis includes disclosure of the potential additive effects of past, present, and reasonably foreseeable activities combined with the effects of the proposed action on Federal and non-Federal lands. The cumulative effects analysis area boundary is defined by where the effects are no longer apparent. For this project the cumulative effects analysis boundary is the same as the boundaries of the Long Canyon Creek, Parker Creek, Trout Creek, Fisher Creek, Myrtle Creek and Ball Creek 6th level watersheds. The estimated analysis timeframe for cumulative effects for this project is 20 years.

Effects of Past, Present, and Reasonably Foreseeable Activities within the Assessment Area:

The following are ongoing and reasonably foreseeable activities in the assessment area that are common to all alternatives. They would occur with or without the implementation of any of the alternatives, including the no action alternative.

Fire Suppression - Fire suppression activities would continue to occur within the project area. Fire suppression activities that include ground disturbance could potentially increase the potential for sediment production and delivery. The occurrence of a catastrophic wildfire within the watersheds being analyzed could also create conditions favorable for increased sediment production and delivery to the streams, which could potentially affect channel form and function. The degree to which this may occur would depend on the size of the fire, the intensity of the burn and the amount of ground disturbing activity. The treatments proposed for this project would most likely decrease the potential of wildfire on the ridge tops within the project area, which would reduce the potential of catastrophic wildfire occurring in the watersheds. Additionally, the proposed treatments would also decrease the intensity of a fire should one occur; which would decrease the potential negative effects of fire on watershed resources.

Firewood Gathering - Firewood gathering would occur within the assessment area, but would not occur in any of the proposed treatment areas. The cutting of firewood is only allowed along open roads. Firewood cutting occurs intermittently and on a small scale. No ground disturbing activities are involved. No additional effects to watershed or fisheries are expected to occur.

Weed Treatment and Monitoring - Weed treatment activities follow guidelines established in the Noxious Weed Management Projects FEIS for the Bonners Ferry Ranger District, is done primarily along roadsides, but is also permitted along segments of specific trails and within some past harvest units. The list of treatment areas is contained within Appendix A of the Noxious Weed Management Projects FEIS and a copy of this appendix is located in the Whitebark Pine Restoration EA project file. The effects to aquatic resources were analyzed in that document and its adaptive strategy. No additional effects to watershed or fisheries are expected to occur.

Routine Trail Maintenance - Bonners Ferry Ranger District performs routine annual trail maintenance throughout the assessment area. This maintenance includes the clearing downed logs, repairing segments of tread, improving drainage structures, replacing timbers in bridges and corduroy, repairing signs, and similar tasks. Many of these maintenance activities are designed to mitigate impacts to riparian areas and water resources. They may entail short-term limited increases in sediment to a stream during the project, but would not create long-term additional effects to watershed or fisheries.

Timber Stand Improvement - Pre-commercial thinning (thinning small diameter trees that do not have commercial value), white pine pruning, and planting activities associated with past projects would occur throughout the analysis area. Young, overstocked plantations would be thinned to reduce stocking levels to densities that would improve continued tree growth. White pine saplings in existing plantations would be pruned to improve their resistance to blister rust infection and their opportunity to reach maturity. Past harvest units where artificial regeneration is prescribed would be planted. All of these activities are proposed within past harvest units. Mitigation measures are incorporated into these projects to ensure that no additional effects to watershed or fisheries resources would occur (e.g., projects must meet Forest Plan and INFS (1995) guidelines, would not take place on high risk soils, or where it may adversely affect threatened, endangered, or sensitive fish or MIS species or their habitat).

Myrtle-Cascade FEIS Timber Sales - Three separate timber sales - Big Mack, Mama Cascade, and Salt Lick - analyzed in the Myrtle-Cascade FEIS were sold in fiscal year 2001. Alternatives 3 and 4, of the Whitebark Pine Restoration EA, do not include any proposed treatments within the Myrtle or Cascade Creek drainages. Alternative 2 includes several hundred acres of proposed treatment in these drainages, but none is located near any of the existing harvest units. Mitigation measures are incorporated into these sales to ensure that no additional effects to watershed or fisheries resources would occur (e.g., projects must meet Forest Plan and INFS (1995) guidelines, would not take place on high risk soils, or where it may adversely affect threatened, endangered, sensitive, or MIS fish species or their habitat). (Myrtle Cascade Final EIS and ROD)

The proposed treatments for the Whitebark pine project are located on ridge tops within the headwaters of the 6th level watersheds. Only Alternative 2 contains treatment areas within the Myrtle and Cascade Creek watersheds. Since no direct or indirect effects of these proposed treatments are expected, the implementation of this project should not increase any potential cumulative effects of the management activities that are occurring or may occur within the Myrtle and Cascade Creek watersheds.

Bonners Ferry Ranger District Small Sales EA - The Bonners Ferry Ranger District is currently developing an Environmental Assessment for small salvage opportunities across the district. The areas identified for potential salvage would primarily include areas along open roads and within existing harvest units. The areas identified in the Whitebark Pine Restoration Project are near ridge tops, away from open roads, on sites that would not typically be identified as areas for timber harvest. Each of these proposed projects has a totally different purpose and need for entering stands within the assessment area, consequently each one has identified completely different parcels of land that need treatment.

Myrtle Creek 2003 Fire and BAER Implementation – It was estimated that the Myrtle Creek Fire has the potential of increasing the delivery of sediment to Myrtle Creek on the order of 3½ to 4 times the mean annual loading that occurred prior to the fire. The assessment found that steep, south-facing, first order drainages with high and moderate severity burn have the potential to deliver the most sediment.

The estimated sediment reduction from the BAER treatments is 1½ to 2 times the mean annual pre-fire loading with further significant progressive reduction of risks after the first year (Burned Area Report, Myrtle Creek Fire). Treatments prescribed that will reduce the estimated sediment delivery include aerial straw mulching in areas of high burn severity, aerial hydromulching where erosion potential is high and the ground is too steep to apply and hold straw only, ground hydromulching with seed 200 feet above and below Road 633 in areas that sustained high burn severity, and brush planting and mulching on lacustrine (highly erodible and excessively prone to slumping) soils within the moderate burn severity area with open canopies. There would be no cumulative effects that would result in degraded aquatic resources.

Private Land Activities Within the Assessment Area - Urban and residential land use, such as, residential development, agriculture, grazing, timber harvest, and limited road maintenance, would continue to add sediment to the creeks within the analysis area. No large-scale timber harvest is planned on Forest Capitol's private industrial forestlands, within the next five years. Pre-commercial thinning may occur on these private lands in Section 9, T62N, R2W. Sediment delivery to stream channels from private land would be expected to stay constant or possibly increase with additional activities on private residential or industrial timberlands.

Approximately 80 acres of land owned by Forest Capital have been salvage logged using skyline logging techniques. The area logged is located on lacustrine deposits that have high sub-soil and mass erosion potential. Soil disturbance from these logging activities have the potential to increase the risk of sediment production and delivery to Myrtle Creek.
There would be no cumulative effects that would result in degraded aquatic resources.

D-2. Summary of Cumulative Effects:

The types of treatments being proposed for this project would not increase soil compaction, change soil structure, increase channel densities, or completely remove organic materials from the forest floor. Therefore, any increase in sediment production would not be measurable and recovery would occur within one year (during the next spring growing season). The implementation of INFS and BMP requirements would ensure that any sediment that may be generated would be filtered prior to reaching stream channels (USDA 1995b; USDA 1999; USDA 2000). Even with the estimated sediment increase within Myrtle Creek from the 2003 fire, there still would be, no noteworthy direct, indirect, or cumulative effects that would degrade watershed resources are expected to occur in any of the alternatives from this project.

Additionally, these treatments are located on ridgetops above any other activity occurring within the watershed. Other activities occurring within the project area would continue to supply sediment at its current rate and any increase would *not* be due to activities associated with the Whitebark Pine Restoration Project. Changes in sediment production or delivery are not expected from the proposed project because all management activities would be conducted outside of riparian habitat conservation areas.

Additionally, as displayed in Table 4-16, the treated areas make up less than 6% of the analysis area for each alternative. It also shows that the amount of sensitive landtypes within the proposed treatment areas is small and are scattered through the treatment areas (see Figure 4-4 for an example).

Table 4-16. Summary Comparison of Alternatives

Issue Indicator	Alt 1	Alt 2	Alt 3	Alt 4
Percent of Area Treated	0	5.1	1.5	1.2
Acres of Sensitive Landtype Within Treatment Areas	0	241	51	12

This table also provides a comparison between the four alternatives. Alternative 1, No Action, would have no effects on watershed resources since no treatment would occur. Alternative 2 has the most area proposed for treatment, and the most acres of sensitive landtype. Alternative 2 also has areas to be treated within the Myrtle Creek watershed, which is the municipal water supply for the City of Bonners Ferry. Alternatives 3 and 4 are not significantly different with regards to watershed effects.

D-3. Cumulative Effects to Fisheries

Important fish habitat parameters that are often affected by management activities include water temperature, large woody debris frequency, bank stability, undercut bank, width to depth ratio, pool quality and frequency, and sediment.

None of the fish habitat parameters listed above would be affected by the proposed activities. In general, the Cumulative Effects section in the watershed analysis concluded that changes in sediment production or delivery are not expected from the proposed project alternatives because all management activities will be conducted outside RHCAs and would be using INFS (1995) Standards and Guidelines. In consideration of the no effects conclusion for the direct and indirect effects associated with the proposed project, the cumulative effects are not expected to change the existing condition or trend for fisheries resources. Hence, since all other potential issues have been eliminated due to minimal or no risk justification, then there are no cumulative effects to fish populations or their habitat with any of the action alternatives.

D-4. Consistency with the Forest Plan and Other Regulations

IPNF - Forest Plan (1987)

All alternatives meet the requirements of the IPNF Forest Plan for aquatic resources. Specific requirements and how this project meets them are listed in Appendix B (Best Management Practices). Alternative 1 would not reduce the risk of wildfire or improve the current vegetative conditions. All alternatives would meet the requirements for water resources in the Forest Plan (IPNF 1987).

All alternatives meet the requirements of the IPNF Forest Plan for fisheries. Specific requirements and how this project meets them are listed in Appendix B (Best Management Practices). Alternative 1 would not change riparian habitat conditions, except for a steady increase in the risk of a stand replacement fire over time. The action alternatives would also meet the requirements for fisheries resources in the Forest Plan (IPNF, 1987), as amended by the Inland Native Fish Strategy (INFS, 1995).

Federal and State Standards

With the use of Best Management Practices (BMPs) and mitigation measures outlined in Chapter 2 and Appendix B, the proposed activities on 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).

303(d) Stream Segment – No streams in the project area are listed under the 303(d) list for a pollutant of concern.

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

Endangered Species Act: All alternatives meet the requirements of the Endangered Species Act and none of the action alternatives would not affect endangered white sturgeon or threatened bull trout, and would not jeopardize their continued existence.

Executive Order 12962: All alternatives are consistent with this executive order. The alternatives of is project will have no effect on westslope cutthroat trout, burbot, torrent sculpin, or interior redband trout that would lead toward a trend in federal listing.

State of Idaho Governor's Bull Trout Plan: All alternatives are consistent with the direction in the Governor's Bull Trout Plan.

E. Roadless Area

E-1. Direct and Indirect Effects of the Alternatives

No Action Alternative

Implementation of the No Action Alternative There would not change the current condition of the Selkirk Roadless Area. There would be no direct or indirect effects to the natural integrity, appearance, opportunities for solitude and remoteness, primitive recreation opportunities, or unique features due to implementation of this alternative.

No slashing or burning would be accomplished. Fire suppression would continue to occur throughout the roadless area.

All Action Alternatives

Natural Integrity and Appearance

With the implementation of any of the "action" alternatives (Alternatives 2, 3, 4), the natural integrity and appearance of the roadless area would remain "natural" when seen from a distance. Since the burned areas would utilize only natural barriers for firelines, such as ridges and rock outcrops (no manmade firelines), and the slashing and burning would be done in 2 to 5 acre groups, the resulting stands would appear natural. They would look like they were burned by wildfires; leaving clumps, irregular stringers, and islands of unburned green timber and brush throughout. The only evidence of the burns would be blackened trees, brush, and other woody debris.

The only change that could possibly appear unnatural would be the occasional small diameter stumps that could be seen when traveling cross-country through the roadless area. However, since they would be blackened by the fire and small in diameter, they would not be immediately obvious. With the heavy snow loads at these high elevations and the small size of the stumps they would quickly begin to rot and fall apart. Also, there will not be any stumps within viewing distance of any of the established hiking trails, so the chances of seeing the stumps are limited.

Alternative 2 would have the greatest potential impact since it treats the largest number of acres.

Opportunities for Solitude and Remoteness

In the short-term, while crews are actively preparing the areas for burning, there is a small chance of encountering a crew of 10-15 people in one of the various treatment areas doing chainsaw work. During the burning phase of the project, there is a possibility of encountering a small ground crew and seeing a helicopter used to ignite the burn. The majority of the work would be accomplished in the late summer or fall, after the Labor Day holiday, when recreation use in the area is low.

In the long-term, after the burning has been completed, there would not be any direct or indirect effects to the opportunity for solitude and remoteness. Access would remain the same as the

current condition, since no new roads or trails would be constructed or reconstructed for this project.

Since this roadless area covers nearly 102,000 acres, and the treatment areas cover a maximum of roughly 7,300 acres (Alternative 2), there is still adequate area to obtain an opportunity for solitude and remoteness in both the short and long-term.

Primitive Recreation Opportunities

The slashing and burning operations would not have any direct or indirect effects on primitive recreation opportunities. As discussed above with the opportunity for solitude and remoteness, there would be adequate area for primitive recreation opportunities with the implementation of any of the "action" alternatives.

Unique Features

The slashing and burning operations would not have any direct or indirect effects on unique features. During the alternative development phase of the project, all treatment areas adjacent to or including unique features were eliminated from consideration for treatment.

Manageability and Boundaries

The size and shape of the Selkirk Roadless Area would not be changed through the implementation of any of the "action" alternatives. For this reason, they would not have any direct or indirect effects on manageability and boundaries.

E-2. Cumulative Effects Analysis

Cumulatively, the overall degree of natural integrity, appearance, opportunities for solitude and remoteness, primitive recreation opportunities, and unique features for the majority of the Selkirk Roadless Area would remain high.

Cumulative effects analysis includes disclosure of the potential additive effects of past, present, and reasonably foreseeable activities combined with the effects of the proposed action on Federal and non-Federal lands. The cumulative effects analysis area boundary is defined as the area where the effects are no longer apparent. For this project, the cumulative effects analysis boundary is the same as the assessment area boundary.

Reasonably Foreseeable Activities

The following are ongoing and reasonably foreseeable activities in the assessment area. They would occur with or without the implementation of any of the alternatives, including the no action alternative.

Firewood Gathering - Firewood gathering would occur within the assessment area along open roads, but not within the Selkirk Roadless Area. This activity would not lead to any additional direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Treatment of Noxious Weeds - Noxious weed treatment, as conducted under the guidelines established in the Noxious Weed Management Projects FEIS for the Bonners Ferry Ranger District, would not be accomplished within the Selkirk Roadless Area. This activity would not lead to any additional direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Routine Trail Maintenance - Annually, the Bonners Ferry Ranger District performs routine trail maintenance throughout the assessment area, primarily within the Selkirk Roadless Area. The only potential impact between this activity and the implementation of the whitebark pine project would be minor work delays or additional coordination efforts between the trail crew and whitebark pine crew. This activity would not lead to any additional direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Timber Stand Improvement – Timber stand improvement work, in addition to the proposed whitebark pine treatment areas, would not occur within the Selkirk Roadless Area. There would be no direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Myrtle-Cascade FEIS Timber Sales – None of the harvest areas selected for treatment in the Myrtle-Cascade ROD are located in the Selkirk Roadless Area. These timber sales would not lead to any additional direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Bonners Ferry Ranger District Small Sales EA - The Bonners Ferry Ranger District is currently developing an environmental assessment for small salvage opportunities across the district. None of the proposed salvage harvest would occur within the Selkirk Roadless Area. For this reason this activity would not lead to any additional direct, indirect, or cumulative effects to the Selkirk Roadless Area.

Private Lands -- Lands managed by Forest Capital, LLC. in section 9 of the Myrtle Creek drainage are scheduled for commercial thinning activities within the next 5 years. The cumulative effects of this management would decrease the naturalness of the area in the lower portion of the Jim Creek drainage (a tributary to Myrtle Creek).

E-3. Consistency with the Forest Plan

The activities associated with all of the alternatives are consistent with Management Area direction and the Forest Plan objective regarding the roadless resource.

The goals of the Forest Plan in relation to the Selkirk Roadless Area are to

- Manage the IPNF to provide a share of the Regional goals for wilderness management acres, and
- Manage special areas for the unique qualities that precipitated their designation; i.e. Wild and Scenic Rivers, Scenic Areas, Botanical Areas, etc,
- A portion of the Selkirk Roadless Area, specifically the Selkirk crest, is managed as proposed wilderness.

The effects on proposed wilderness are discussed in the Recreation section of this chapter.

The Forest Plan Roadless resource objective is to manage the roadless areas based on the direction and goals established for the respective Management Areas within which they are

located. There are no Forest Plan standards specifically for roadless areas; however, some related standards address the roadless areas within Management Area standards. The treatment areas for this project are located primarily in MA10 - roadless recreation, and MA11 - proposed wilderness. Road construction is not allowed in MA10, except "for those few cases where primitive roads may be built to improve the semi-primitive recreation experience." Within MA11, no new roads may be constructed. For the Whitebark Pine project, no new roads would be constructed.

E-4. Consistency with Other Policy and Direction

The proposal is consistent with current Forest Service policy and direction regarding management of inventoried roadless areas issued in Interim Directive (ID) No: 1920-2001-1 under FSM 1925.04b(1)(d). The proposal was reviewed by the Regional Forester who has concurred with the purpose, and need for this project. (Project file Internal Correspondence document 01)

F. Unroaded Analysis

Direct and indirect effects were evaluated for the unroaded portions of Myrtle Peak and Myrtle Ridge treatment areas that fall outside the Selkirk Roadless Area (described in Chapter 3.) Details of the cumulative effects analysis evaluating the potential effects of the Whitebark Pine for these areas is located in the project file. Alternative 2 is the only alternative that includes activities in these areas; therefore, Alternatives 3 and 4 were not included in the analysis.

Table 4-17. Activities outside the Selkirk Roadless Area

Whitebark Pine Restoration Treatment	Alt 1	Alt 2 Myrtle Peak	Alt 2 Myrtle Ridge
Slash and Burn	0	10	80
Whitebark Pine Release	0	0	0
Burn Only	0	0	0
Total Acres (Unroaded) to be Treated	**0**	**10 ##**	**80 ##**

acres are approximate

F-1. Direct and Indirect Effects of the Alternatives

Because the same type of treatment would be used in both treatment areas (Myrtle Creek and Myrtle Ridge) and due to the high degree of similarity in their characteristics, potential effects are described together.

Alternative 1 – No Action

Because this alternative would defer treatments, there would be no change to these areas outside the Selkirk IRA, into the foreseeable future.

Private timberland activities would be the only reasonably foreseeable activities (EA, p. 2-29) that could affect the areas. Since the private lands are so close to the areas, future logging or road construction activities have the potential to affect the natural integrity, apparent naturalness, remoteness, and solitude within the sub-drainages of Jim Creek and the unnamed tributary. There would be no change to the special features or manageability/boundaries element.

Alternative 2

The project does not involve construction of either temporary or permanent roads; thus, the unroaded area would remain unroaded.

The slash and burn treatments would involve mechanical slashing (chain saw work) followed by prescribed burns (for detailed descriptions see EA, p. 2-8)

It is likely that the between 2 and 5 acres of the 10-acre portion of the Myrtle Peak treatment area would be slashed. Likewise, between 20 and 40 acres of the 80-acre portion of the Myrtle Ridge treatment area would be slashed.

(Detailed information is available in the Recreation report, discussions throughout the Vegetation and Recreation sections of the EA and in the Unroaded Analysis in the project file.)

Natural Integrity Because the project will not involve road construction and the required design criteria (see Chapter 2) would be followed, there would be no long-term effect on the natural integrity of the areas..

Apparent Naturalness The natural integrity and appearance of the unroaded area would remain natural when seen from a distance. The burned areas would look as they had been burned by a wildfire. Occasional small stumps would possibly appear unnatural, but would not be immediately obvious. See the Roadless Area discussion on page 4-79 for more information.

Remoteness and Solitude Because access to the areas would not be changed, the physical remoteness would be unaffected (EA, pp. 4-79 through 4-80).

Special Features The treatments do not involve any activities that would affect Myrtle Lake, which is not visible from the unroaded areas, or any other unique features (EA, p. 4-80).

Manageability and Boundaries The treatments do not include construction of roads (temporary or permanent). There would be no changes to the boundaries, property lines or size of the area as a result of this project. There would be no effects on manageability or boundaries. (EA, p. 4-80).

F-2. Cumulative Effects Analysis

Cumulatively, the overall degree of natural integrity, appearance, opportunities for solitude and remoteness, primitive recreation opportunities, and unique features for the unroaded areas would not change.

F-3. Reasonably Foreseeable Activities

The following are ongoing and reasonably foreseeable activities in the assessment area. They would occur with or without the implementation of any of the alternatives, including the no action alternative.

Firewood Gathering - Firewood gathering would occur within the assessment area along open roads, there are no roads within the unroaded area; thus there would be no additional direct, indirect, or cumulative effects to the unroaded areas.

Treatment of Noxious Weeds - Noxious weed treatment, as conducted under the guidelines established in the Noxious Weed Management Projects FEIS for the Bonners Ferry Ranger District, would not be accomplished within the unroaded areas.

Routine Trail Maintenance – There are no trails within these unroaded areas (project file Unroaded map.)

Timber Stand Improvement – There would be no foreseeable timber stand improvement work in the unroaded areas.

Myrtle-Cascade FEIS Timber Sales – None of the harvest areas selected for treatment in the Myrtle-Cascade ROD are located in these unroaded area. These timber sales would not lead to any additional direct, indirect, or cumulative effects.

Bonners Ferry Ranger District Small Sales EA - The Bonners Ferry Ranger District is currently developing an environmental assessment for small salvage opportunities across the district. None of the proposed salvage harvest would occur within the unroaded areas. For this reason this activity would not lead to any additional direct, indirect, or cumulative effects.

Private Lands -- Lands managed by Forest Capital, LLC. in section 9 of the Myrtle Creek drainage are scheduled for commercial thinning activities within the next 5 years. The cumulative effects of this management would decrease the naturalness of the area in the lower portion of the Jim Creek drainage (a tributary to Myrtle Creek).

Forest Plan Consistency

The activities are consistent with the directions found in the IPNF Forest Plan (EA, pp. 4-11, 4-12, 4-44, 4-55, 4-63, 4-66, 4-78, 4-81, 4-82)

Consistency with Other Policy and Direction

The activities are consistent with policy and direction regarding management of inventoried roadless areas (EA, pp.4-78, 4-79, 4-82). The Trout Creek Recreation guidelines do not apply to these portions of the treatment activities, since they occur outside the Trout Creek Project area (see discussion on page 4-23).

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APPENDIX A - OTHER RESOURCE CONCERNS

A.1 BIODIVERSITY

A. Biological Factors

1. Noxious Weeds

The implementation of the Whitebark Pine project would entail slashing and burning. Because of limited road access, almost the entire process would be accomplished through the use of helicopters for crew transport and burning operations. Existing helispots would be used. No heavy machinery would be used; thus there would be no ground disturbing activities. For this reason no further introduction or distribution of weed seeds is expected.

Disturbed sites would be monitored, and weeds treated as necessary. An integrated approach, including biological, mechanical, cultural and chemical control, would be used. This would decrease the chance of existing infestations becoming established in new areas, and would reduce the risk of new invaders becoming established. All weed management activities would be conducted in accordance with the guidelines in the Bonners Ferry Noxious Weed Control Project FEIS (USDA 1995).

2. Wildlife

The following table provides a summary of the determination of effects for Threatened, Endangered, Sensitive, and Management Indicator Species; detailed information can be found in Chapters 3, 4, Appendix B and in the Wildlife Report (project file).

Acronyms used in the wildlife and fisheries tables A-1, and A-2:

NE = No effect (T&E species)
NI = No Impact
NLAA = Not likely to adversely affect (T&E species)
MI = May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species.
WI = would impact individuals or habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species.
BI = Beneficial Impact

Table A-1. Determination of Effects for Wildlife Species

Species	Alt 1	Alt 2	Alt 3	Alt 4
Endangered				
Woodland Caribou	NE	NLAA	NLAA	NLAA
Threatened				
Gray Wolf	NE	NE	NE	NE
Grizzly Bear	NE	NLAA	NLAA	NLAA
Lynx	NE	NLAA	NLAA	NLAA
Bald Eagle	NE	NE	NE	NE
Sensitive				
Black-backed Woodpecker	BI	MI	MI	MI
Boreal Toad	NI	NI	NI	NI
Coeur d'Alene Salamander	NI	NI	NI	NI
Common Loon	NI	NI	NI	NI
Flammulated Owl	NI	NI	NI	NI
Fisher	NI	NI	NI	NI
Harlequin Duck	NI	NI	NI	NI
Northern Bog Lemming	NI	NI	NI	NI
Northern Goshawk	NI	NI	NI	NI
Northern Leopard Frog	NI	NI	NI	NI
Peregrine Falcon	NI	NI	NI	NI
Townsend's Big-eared Bat	NI	NI	NI	NI
White-headed Woodpecker	NI	NI	NI	NI
Wolverine	NI	NI	NI	NI
Management Indicator Species				
American Marten	NI	NI	NI	NI
Pileated Woodpecker	NI	NI	NI	NI
White-tailed Deer	NI	NI	NI	NI

Snag Dependent Species - Potential effects to snag habitat are addressed in detail in Chapters 3 and 4 descriptions of snag-dependent species (pileated woodpecker, flammulated owl, northern goshawk and fisher), and in the analysis of effects upon black-backed woodpecker.

3. Fish

A summary of the determination of effects for Threatened, Endangered, Sensitive, and Management Indicator Species is provided in Table A-2. Detailed information can be found Appendix B and in the Fisheries/Aquatics Report (project file).

Table A-2. Determination of Effects for Fish Species

Federally listed species:

Species	Alt 1	Alt 2	Alt 3	Alt 4
Endangered:				
White Sturgeon *Acipenser Transmontanus*	NE	NE	NE	NE
Threatened:				
Bull Trout *Salvelinus Confluentus*	NE	NE	NE	NE

Sensitive Species:

Species	Alt 1	Alt 2	Alt 3	Alt 4
Burbot *Lota Lota*	NE	NE	NE	NE
Interior Redband Trout *Oncorhynchus Mykiss Gairdneri*	NE	NE	NE	NE
Westslope Cutthroat Trout *Oncorhynchus Clarki Lewisi*	NE	NE	NE	NE
Torrent Sculpin *Cottus Rhotheus*	NE	NE	NE	NE

4. Plants

a) **Threatened, Endangered Species** - Refer to the Biological Assessment in Appendix B for more detailed information.

There are no federally listed Endangered plant species suspected to occur in the Idaho Panhandle National Forests. Currently, the US Fish and Wildlife Service (USDI 2003) indicates three species listed as Threatened for the Idaho Panhandle National Forests (IPNF): Water howellia (Howellia aquatilis), Ute ladies'-tresses (Spiranthes diluvialis), and Spalding's catchfly (Silene spaldingii).

b) Sensitive Plant Species and Forest Species of Concern

The Northern Regional Forester's sensitive species list for the IPNF contains 63 plant species. Certain species are known to occur only within certain subbasins, while others are

known throughout the IPNF. Fifty-six species are known or suspected to occur in the Kaniksu portion of the IPNF, which encompasses the project area.

In addition, several "Forest species of concern" are addressed in this analysis. A Forest species of concern is generally not at risk on a range-wide, region-wide or state level, but may be imperiled within a planning area, such as a National Forest. While Biological Evaluations are not required to address Forest species of concern, these species are addressed in effects analysis to provide for maintenance of populations as directed in NFMA. A discussion of Forest species of concern is included with the discussion of sensitive species. A list of sensitive species and Forest species of concern is included in the Project File.

For more detailed information refer to the Threatened, Endangered and Sensitive Plants and Forest Species of Concern Report in the project file and the Sensitive Plants Biological Evaluation in Appendix B.

c) Native Plant Species

The regional office has issued policies for the use of native plant seed in erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects, to the extent practicable. The purpose was to emphasize the importance of biodiversity, and to recognize the intrinsic value of native plant vegetation as a component of natural forest and rangeland ecosystems. (Regional Forester letter to Region 1 Forest Supervisors June 8, 1993, project file.)

5. Neotropical Migrant Birds

A wide variety of Neotropical migrant birds breed in the United States and winter in Central or South America. Preferred habitats vary amongst the species. The best known management strategy is to maintain a distribution in the timber age classes; such as encouraging old-growth characteristics, leaving snags and replacement trees, leaving or planting the natural diversity of trees found in the area, burning and allowing fires to happen in a manner similar to natural fire regimes, and mimicking natural landscape patterns. While no single forest condition or structural type will benefit all species simultaneously, providing a mosaic of habitat conditions and age classes can improve habitat values for forest birds.

Idaho has 243 species of birds that breed in the state (Idaho Partners in Flight 2000). Idaho Partners in Flight (IPF) has identified and prioritized four habitats that represent species of moderately to high vulnerability, and species with declining or uncertain population trends -- riparian habitat, non-riverine wetlands, sagebrush shrub, and dry ponderosa pine/Douglas-fir/grand fir forests (Idaho Partners in Flight 2000).

Two priority habitats occur in the Whitebark Pine project area: riparian habitat and dry ponderosa pine/Douglas-fir/grand fir forests. However, these priority habitats would not be adversely affected by the proposed actions. Applying Best Management practices and the

Inland Native Fish Strategy (INFS) would protect and maintain riparian habitat that occurs in the treatments areas for the project (see Chapter II –Features Common to All Action Alternatives section).

Because this project would not cause a loss of riparian habitat or dry ponderosa pine/Douglas-fir/grand fir forests, no further discussion and analysis are necessary. Refer to Chapters 3, 4 and the wildlife report in the project file for more detailed information.

6. Old Growth

Old growth forests have a unique structure and composition that provides critical habitat for a wide range of plants, animals, and other biota. The 1987 Forest Plan, Standard 10b calls for maintaining "10% of the forested portion of the IPNF as old growth". The Forest Plan identified 2,310,000 forested acres on the IPNF. Therefore, the Forest Plan Standard requires maintaining 231,000 acres of old growth on the Forest.

Forest Plan Standard 10a incorporates the definition of old growth developed by the Regional Old Growth Task Force, documented in: Green, et. al., *Old Growth Forest Types of the Northern Region,* USDA, Forest Service, Northern Region, 1992.

Sub-Basin (river)	Allocated Existing Old Growth *codes 9, 10*	Allocated Ancient Cedar *code 2*	Allocated Potential Old Growth *code 11*	Total Allocated Old Growth *codes 2, 9,10, 11*	Additional Field Verified Old Growth *code 12*	Total All Old Growth *codes 2, 9, 10, 11, 12*
Kootenai	60,668	516	3,441	64,625	0	64,625

Information from the 2002 IPNF Monitoring Report

At present, the Bonners Ferry Ranger District is required to maintain approximately 14% of the total forested area of the district as old growth, as directed in a letter from the Forest Supervisor on May 7, 1991. The Whitebark Pine assessment area includes all or portions of old growth management units (OGMU) 6, 7, 8, 9, 10, 11, 12, 13, and 14.

The proposed treatments would not change the old growth character of these stands. Only small diameter material would be treated in small patches to create a fuel bed for prescribed burning. No large diameter old growth trees would be cut. Some of the large diameter trees may be killed by the burning; however, the treatment areas already contain high levels of mortality from blister rust and mountain pine beetle activity and the additional mortality would be minimal. Fire was historically very common and integral part of this ecosystem.

Activities within the OGMUs would not affect the function and distribution of old growth within the assessment area.

7. Fragmentation

Fragmentation occurs when an expanse of habitat is broken into two or more patches that are separated by different types of habitat. This would occur through natural disturbances such as fire, windstorms, hurricanes, tornadoes, and volcanic eruptions and through man caused activities like logging and road building. This creates habitats that are suitable to some species while being less suitable or unsuitable to others.

While the project treatments will take place over a relatively wide area, actual treatment areas are too small to cause landscape-scale habitat fragmentation (see Chapter 4 Wildlife discussion for more information.)

8. Linkages

Cover linkages between forested habitats allow species to travel between suitable habitats. Species differ in their ability to move between fragmented habitats. Some move freely while others would not cross even rather narrow gaps of open habitat.

There is a high level of linkages and travel corridors between suitable habitats in the project area. The proposed action would not have a measurable effect on any linkages within or outside the project area (see Chapter 4 Wildlife discussion for more information.)

9. Range Allotments

There are no range allotments within any of the proposed treatment areas within the Whitebark Pine analysis area.

A.2 SOCIAL/ECONOMIC FACTORS

A. Cultural Resources

Cultural resource surveys of the project area have been completed as directed by the Cultural Resources Management Practices (Forest Plan, Appendix FF). The cultural resource inventories are on file for selective review at the Bonners Ferry Ranger Station.

Only one site would be potentially impacted with the implementation of this project. That site, a trail, must be maintained and left in an open, identifiable condition. It would be protected under all alternatives. A decision has been made to mitigate the impact to this site in accordance with the National Historic Preservation Act of 1966. Any future discovery of cultural resource sites would be inventoried and protected if found to be of cultural significance. Currently, there are no known districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places that would be affected by the proposed actions. As such, the actions should not cause the loss or destruction of significant scientific, cultural, or historic resources.

B. Economics/Community Stability

The purpose and need for this project is to restore forest health and maintain whitebark pine in the ecosystem, to reintroduce fire, and to provide for wildlife habitat diversity and security. None of the proposed action alternatives, developed to meet the purpose and need, would generate any money to the United States Treasury. This project would have to be completed through the use of appropriated funds. These funds would be spent on wages for the crew members and for use of the helicopter. Since these resources are based in northern Idaho, it is expected that the majority of this money would be spent within the local communities.

Implementation of the No Action alternative would do nothing to help sustain community stability. Documentation of the analysis and considerations for community stability is contained in the Final Environmental Impact Statement for the IPNF Forest Plan.

C. Visual Quality

Visual sensitivity is high for all action alternatives; however, the visual classification is not as important as the fact that the area of visual influence is broad. Each treatment area can be viewed from sensitive and popular peaks and ridges.

Burn only areas: The treatments would result in mosaic-type burn patterns that would be consistent with the line, form, and texture found in the Selkirk landscapes. In the short-term, the areas would be blackened; however within the first summer and fall, ground plants would resprout and green-up. The visual impact from the background and middle ground would decrease over time. In the long term, from a distance, the treatments would be compatible with scenery management direction.

Slash and burn areas: In the foreground, visual impacts would be similar to the burn only treatment areas. Sensitivity to the effects would vary from area to area. Burned stumps and downed trees would be apparent and it would be apparent that mechanical manipulation had been used.

Slashing only areas: The red color of dead needles on the slash would dominate for one or two seasons, becoming less apparent over time. Cross country travelers would encounter an unusual amount of downed trees; unlikely to be enough to impede hiking.

Conclusion: Implementation of any of the alternatives would not result in negative visual impacts from an increase of unnatural appearing openings.

D. Public Health and Safety

1. Air Quality

Regulatory Framework

The basic framework for controlling air pollutants in the United States is mandated by the 1970 Clean Air Act (CAA), as amended in 1977, 1990, and 1999. The CAA was designed to "protect and enhance" air quality. The primary means by which this is to be accomplished is through implementation of National Ambient Air Quality Standards (NAAQS).

Section 160 of the CAA requires measures "to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreation, scenic, or historic value." The Clean Air Act amendments of 1977 set up a process that included designation of Class I, II, and III areas for air quality management.

Class I - These areas include all international parks, national parks greater than 6,000 acres, and national wildernesses greater than 5,000 acres that existed on August 7, 1977. This class provides the most protection to pristine lands by severely limiting the amount of additional manmade air pollution that can be added to these areas. The Cabinet Mountains Wilderness, the nearest Class I wilderness area to the project, area is located to the southeast of the project area.

Smoke from the proposed burning for the Whitebark Pine Restoration EA would normally be carried to the northwest by the prevailing southwest flows aloft and would not affect the Class I airshed.

Class II - These areas include all other areas of the country. A greater amount of additional manmade air pollution may be added to these areas. These areas may be upgraded to Class I. All Forest Service lands which are not designated as Class I are Class II lands. The land within the Decision Area is designated as Class II.

Class III - These areas would have the least amount of regulatory protection from additional air pollution. To date, no Class III areas have been designated anywhere in the country.

Environmental Consequences

The Clean Air Act requires the Environmental Protection Agency (EPA) to identify pollutants that have adverse effects on public health and welfare and to establish air quality standards for each pollutant. Each state is also required to develop an implementation plan to maintain air quality (Sandberg, et al, 1988). The EPA has issued National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, lead, and particulate matter less than or equal to 10 microns (PM_{10}). The annual standard in the State of Idaho for PM_{10} is 50 $\mu g/m^3$ and 150 $\mu g/m^3$ for a 24-hour period. For $PM_{2.5}$ the annual standards are 15 $\mu g/m^3$ and 65 $\mu g/m^3$ for a 24-hour period.

a) Methodology

A “Decision Analysis” matrix (USFS 1998) is used to stratify burns based on levels of potential emissions. This matrix identifies the appropriate method for analyzing emissions and dispersion. The decision was made to model emission production for each alternative using the First Order Fire Effects Model (FOFEM) (see project file). This model is a software program designed for resource managers to estimate woody fuel consumption and smoke production for forest stands (USDA 1997b). FOFEM calculates emission production, not visibility, or dispersion. It estimates the total pounds per acre of PM 2.5 (particulate matter less than 2.5 microns in diameter), PM10 (particulate matter less than 10 microns in diameter), and carbon monoxide that will be generated. Inputs for the program include fuel loading by size class, vegetation, density (herbaceous, shrub, and tree regeneration), anticipated fire intensity, fuel moisture, duff depth, and season of burning.

The Idaho Panhandle National Forests are a party to the North Idaho Smoke Management Memorandum of Agreement (MOA), which established procedures regulating the amount of smoke produced by prescribed fire. A principal objective of the MOA is to "minimize or prevent the accumulation of smoke in Idaho to such a degree as is necessary to protect State and Federal Ambient Air Quality Standards when prescribed burning is necessary for the conduct of accepted forest practices." The North Idaho group currently uses the services and procedures of the Idaho/Montana State Airshed Group. The procedures used by the Airshed Group are considered to be the Best Available Control Technology (BACT) by the Montana Air Quality Bureau for major open burning in Montana. A Missoula-based monitoring unit is responsible for coordinating prescribed burning in north Idaho year-round. This unit monitors meteorological data, air quality data, and planned prescribed burning and makes a decision daily on whether or not any restrictions on burning are necessary the following day. If smoke intrusion does occur, the district would voluntarily shut down all planned burning operations until the airshed is cleared. If necessary in the interest of public safety, the district would work with local, county, and state officials to notify the public of any potential health concerns and mitigation that can be taken, if any, to alleviate these concerns.

In practice, a list of all planned prescribed burns on the Bonners Ferry Ranger District is forwarded to the smoke monitoring unit by February 15 for spring burns and by August 15 for fall burns. Daily, by 12:00 p.m. Pacific Time, the Bonners Ferry Ranger District will enter all burning planned for the next day onto the smoke monitoring web page. Typically, by 3:00 p.m. Pacific Time, the same day, the monitoring unit will inform the district if any restrictions are to be in effect the following day along with a list of approved burns for the following day. All of these precautions would limit smoke accumulations in the valley to legal, acceptable limits.

The cumulative effects area of smoke, road dust, and other related effects is difficult to tie to a specific geographic area. The distance that smoke and dust will travel is dependent on numerous factors, including the prevailing winds, local winds, inversions, the amount of smoke generated from a burn, the amount of fuel to consume, the stability of the atmosphere. However, since the project area is located in northern Idaho, only a short distance from Montana, it is reasonable to consider the cumulative effects area to be northeastern Idaho and northwestern Montana.

b) Alternative 1 (No Action)

Direct and Indirect Effects

In the project area, current management activities contribute only minimal pollutants to the local airsheds. Under the No Action Alternative the primary sources of pollution would be vehicle exhaust, road dust, agricultural burning, other forest residue burning, and residential wood stove use.

This alternative would have no immediate adverse effect on air quality, except in the case of a wildfire. If a large wildfire were to occur, the potential for air quality degradation and reduced visibility could increase. These emissions may remain in the local and surrounding airsheds for a period of a few days to several weeks, depending on the fire's size and intensity.

Cumulative Effects

Air resources are somewhat unique in that the past impacts to air quality are not usually evident. So, the effects from private land prescribed burning, residential wood combustion, traffic exhaust, road dust, and any escaped wildfires would be cumulative only with the local emission sources that would occur at the same time.

c) Alternatives 2, 3, and 4

Direct and Indirect Effects

The burning proposed for the three action alternatives would temporarily affect air quality. All three include burning primarily for seedbed preparation to favor establishment of new

whitebark pine seedlings. This burning would result in increased smoke within the immediate vicinity of each burn on the day of the burn, with the possibility of increased concentrations at the lower elevations in the event of a nighttime inversion. Typically, this would occur only on the day of the burns, with only scattered, minor drift smoke possible for two to three days after that. To limit the potential effects of inversions, the Montana/Idaho State Airshed Group will only allow prescribed burning when good or excellent dispersion conditions are indicated.

The risk of smoke intrusion into Class I airsheds and non-attainment areas from any prescribed burning operations in the project area would be low due to distance and prevailing winds. Smoke created in the project area is normally carried to the northeast by prevailing southwest flows aloft and would not normally affect these areas.

Class 1 Airshed:
Cabinet Mtn Wilderness

Non-attainment areas:
Sandpoint & Couer d'Alene, ID; Libby, MT; Spokane, WA

According to the "Decision Analysis for Smoke Modeling," as outlined in the document Describing Air Resource Impacts From Prescribed Fire Projects In NEPA Documents For Montana and Idaho In Region 1 and Region 4, any project that generates more than 100 tons of PM2.5 or PM10 per year must be further analyzed using the NFSPUFF model: An Air Quality Model for Smoke Management in Complex Terrain (USDA 1997). The tables below display the total amount of PM2.5 and PM10 that could be generated by all of the prescribed burning.

For Alternative 2 the maximum total emissions were estimated at 586 tons of PM10 and 496 tons of PM 2.5, as displayed in Table A-xxx below. These figures may appear high, but this is the amount that would be generated if all 6,527 acres were burned in one season. Burning that many acres in one season is not possible, considering the windows of opportunity that are available each season and the logistics required to accomplish such a task. Realistically, it would take the district an estimated 6-8 seasons to accomplish this amount of burning, which would equate to roughly 70-100 tons per year of PM10 and about 60-80 tons per year of PM2.5. This is within the required 100 ton maximum per project per year mentioned earlier. No further analysis using the NFSPUFF model was necessary.

Table A-1 Estimated Emissions for Alternative 2

Unit	Treatment	Burn Unit Acres	PM_{10}	$PM_{2.5}$	Secondary Burn Acres	PM_{10}	$PM_{2.5}$
Cutoff Peak	Slash and Burn	445	42	36	249	19	16
Long Canyon	Slash and Burn	278	26	22	174	13	11
Fisher Peak	Whitebark Pine Release	0	0	0	0	0	0
Fisher Farnham	Slash and Burn	1,634	155	131	479	36	31
Trout Lake	Whitebark Pine Release	0	0	0	0	0	0
Ball Lakes	Slash and Burn	621	59	50	227	17	15

Unit	Treatment	Burn Unit Acres	PM_{10}	$PM_{2.5}$	Secondary Burn Acres	PM_{10}	$PM_{2.5}$
Russell Peak	Slash and Burn	260	25	21	90	7	6
Russell Ridge	Whitebark Pine Release	0	0	0	0	0	0
Burton Creek	Slash and Burn	108	10	9	67	5	4
Burton Peak	Slash and Burn	330	31	26	108	8	7
Myrtle Peak	Slash and Burn	639	61	51	162	12	10
Myrtle Ridge	Slash and Burn	490	47	39	166	13	11
Total Estimated Emissions			**456**	**385**		**130**	**111**

Burn unit and secondary burn areas are shown in acres.
Particulate Matter (PM) is shown in tons.

For Alternative 3 the maximum total emissions were estimated at 152 tons of PM10 and 127 tons of PM 2.5, as displayed in Table A-xxx below. This figure is higher than the allowed 100 tons per project per year, but this is the amount that would be generated if all 2,062 acres were burned in one season. Burning that many acres in one season is not typically accomplished on the Bonners Ferry Ranger District because of the relatively short windows of opportunity that are available each season, especially at the elevations targeted for treatment with this project. Realistically, it would take the District an estimated 2-3 seasons to accomplish this amount of burning, considering the logistics of such a project. This would equate to roughly 50-75 tons per year of PM10 and about 40-65 tons per year of PM2.5. Both of these amounts are well within the required 100 tons allowed each season per project. No further analysis using the NFSPUFF model was necessary.

Table A-xx Estimated Emissions for Alternative 3

Unit	Treatment	Unit Burned Acres	Total PM_{10} (tons)	Total $PM_{2.5}$ (tons)	Secondary Burn Acres	Total PM_{10} (tons)	Total $PM_{2.5}$ (tons)
Cutoff Peak	Slash and Burn	143	14	11	46	3	3
Long Canyon	Slash and Burn	213	20	17	119	9	8
Fisher Peak	Whitebark Pine Release	0	0	0	0	0	0
Big Fisher	Slash and Burn	165	16	13	63	5	4
Farnham Ridge	Slash and Burn	196	19	16	42	3	3
Ball Lakes	Slash and Burn	203	19	16	53	4	3
Russell Peak	Slash and Burn	230	22	18	60	5	4
Russell Ridge	Whitebark Pine Release	0	0	0	0	0	0
Burton Ridge	Slash and Burn	108	10	9	33	3	2
Alternative 3 Totals			120	100		32	27

For Alternative 4 the maximum total emissions were estimated at 123 tons of PM10 and 92

tons of PM 2.5, as displayed in Table Axxx below. The amount of PM10 exceeds the allowed 100 tons per project per year, but this is the amount that would be generated if all 1,730 acres were burned in one season. Burning that many acres in one season is not typically accomplished on the Bonners Ferry Ranger District because of the relatively short windows of opportunity that are available each season, especially at the elevations targeted for treatment in the EA. Realistically, it would take the District an estimated 2-3 seasons to accomplish this amount of burning, considering the logistics of such a project. This would equate to roughly 40-60 tons per year of PM10 and about 30-45 tons per year of PM2.5. Both of these amounts are well within the required 100 tons allowed each season per project. No further analysis using the NFSPUFF model was necessary.

Table A-xxx Estimated Emissions for Alternative 4

Unit	Treatment	Unit Burned Acres	Total PM_{10} (tons)	Total $PM_{2.5}$ (tons)	Secondary Burn Acres	Total PM_{10} (tons)	Total $PM_{2.5}$ (tons)
Cutoff Peak	Slash and Burn	143	14	11	46	3	3
Fisher Peak	Whitebark Pine Release	0	0	0	0	0	0
Big Fisher	Slash and Burn	165	16	13	63	5	4
Farnham Ridge	Slash and Burn	196	19	16	42	3	3
Ball Lakes	Slash and Burn	203	19	16	53	4	3
Russell Peak	Slash and Burn	230	22	18	60	5	4
Russell Ridge	Whitebark Pine Release	0	0	0	0	0	0
Burton Ridge	Slash and Burn	108	10	9	33	3	2
Alternative 4 Totals			100	83		23	9

d) Cumulative Effects

The emissions from the Whitebark Pine Restoration project would be cumulative with local emission sources occurring at the time of the burning. The operations of the Montana/ Idaho State Airshed Group (described in the methodology section above) are critical to minimizing cumulative air quality impacts in Idaho and Montana. A principle objective of the group is to minimize or prevent the accumulation of smoke in Idaho to such a degree as is necessary to protect State and Federal Ambient Air Quality Standards when prescribed burning is necessary to conduct accepted forest practices.

The monitoring of air pollutants during prescribed burning seasons is used to eliminate burning during times when such activities (including private land management activities) would result in violations of State standards, including unacceptable impacts to non-attainment areas. The Forest Service voluntarily ceases burning operations to avoid violations of State standards. Smoke and particulate matter flow to the northeast and dissipate rapidly during good to excellent dispersion days.

e) Consistency With the Forest Plan and Other Applicable Regulatory Direction

The Forest-wide objectives for air quality include maintaining excellent air quality on the Forest and protecting local and regional air quality by cooperating with the Montana Air Quality Bureau in the Prevention of Significant Deterioration (PSD) Program and the State Implementation Plan (SIP). Requirements of PSD, SIP and the North Idaho/Montana Smoke Management Plan would be met. As mentioned previously, smoke management for air quality is scheduled by the IPNF and is coordinated with and monitored by the North Idaho/ Montana Airshed Group.

The project meets the Clean Air Act through coordination with this group prior to burning, and the use of burning techniques that minimize smoke emissions. Prescribed burning is consistent with State laws requiring treatment of activity-created fuels to reduce the risk of catastrophic forest fires.

2. Effects on Minority Populations and Low-income Populations

The Kootenai Tribe of Idaho was consulted and no cultural sites with importance to the Tribe were identified within the proposed treatment areas.

In addition, no other low-income populations that could potentially be impacted by any of the alternatives are located within the project area.

3. Minerals

There are no mining claims within the proposed treatment areas.

4. Special Uses

Since lands/special uses activities are not a resource per se, there are no specific Forest Plan goals associated with the lands function. Goals, objectives and standards for the various Forest Plan MAs would determine the specific actions necessary to respond to the public's or other agencies' proposals for use of National Forest Lands.

There are four special use permits (SUP) at five separate locations within the analysis area. Four of them are along the Westside Road, as follows:

Permit for an irrigation water transmission pipe, held by Merle Brown
Utility line (electricity), held by Northern Lights, Inc.
Utility lines (telephone & telegraph), held by GTE Northwest.

The other permit is for a hydroelectric generator facility in the Smith Creek drainage, held by Smith Falls Hydropower, Inc. (See map in project file for detailed location information.)

The treatment areas are at least three miles from the closest SUP. Implementation of any of the action alternatives would have no direct, indirect, or cumulative effects on the SUPs.

APPENDIX B – Reports

This appendix contains additional information for wildlife, botany, and fisheries.

A. Wildlife Report

The complete wildlife report is located in the project file. Information for the species analyzed in detail is included in Chapters 2, 3 and 4 of the EA. Discussions for species that are presumed to be present, but not necessarily affected by the proposed action, are summarized in this Appendix. For species or habitat that is not presumed to be present within the affected area, the rational for no further analysis is in the project file.

Table 1 displays the results of the screening process for Threatened, Endangered and Sensitive species (TES), Management Indicator Species (MIS), and other wildlife of interest or special concern known to occur on the Idaho Panhandle National Forests. Check marks denote level of analysis for each species for this project.

Table 1. Species Analysis Screening for the Whitebark Pine project.

	No detailed discussion and analysis is necessary for species or habitat presumed not to be present within the affectec area. The rationale for no further analysis for these species can be found in the project file.	**Supporting rationale is presented in this section for species presumed to be present but not necessarily affected by the proposed actions. No detailed discussion and analysis is necessary.**	Species considered present and potentially affected by the proposed actions are carried forward into a detailed discussion and analysis in Environmental Consequences Section.
Threatened and Endangered Species			
Woodland caribou (*Rangifer tarandus caribou*)			✓
Bald eagle (*Haliaeetus leucocephalus*)	✓		
Canada lynx (*Lynx canadensis*)			✓
Grizzly bear (*Ursus arctos horribilis*)			✓
Northern gray wolf (*Canis lupus*)		✓	
Sensitive Species			
Black-backed woodpecker (*Picoides arcticus*)			✓
Common loon (*Gavia immer*)	✓		
Flammulated owl (*Otus flammeolus*)		✓	
Harlequin duck (*Histrionicus histrionicus*)		✓	
Northern goshawk (*Accipiter gentilis*)		✓	
Peregrine falcon (*Falco peregrinus anatum*)	✓		
White-headed woodpecker (*Picoides albolarvatus*)		✓	

Fisher (*Martes pennanti*)		✓	
Northern bog lemming (*Synaptomys borealis*)	✓		
Townsend's big-eared bat (*Corynorhinus townsendi*)	✓		
Wolverine (*Gulo gulo*)		✓	
Boreal toad (*Bufo boreas*)		✓	
Coeur d'Alene salamander (*Plethodon vandykei idahoensis*)	✓		
Northern leopard frog (*Rana pipiens*)	✓		
MIS and Others			
Pileated woodpecker (*Dryocopus pileatus*)		✓	
American marten (*Martes americana*)		✓	
Rocky Mountain elk (*Cervus elaphus nelsoni*)		✓	
White-tailed deer (*Odocoileus virginianus*)		✓	
Forest land birds		✓	
Snag habitat		✓	

Species Not Analyzed Further

Threatened or Endangered Species

GRAY WOLF

Wolves are highly social animals requiring large areas to roam and feed. Conservation requirements for wolf populations are not fully understood, but the availability of prey and reducing risk of human-caused mortality are considered key components (USDI 1987, Tucker et al. 1990). The risk of human-caused mortality can be directly related to the density and distribution of open roads.

Reference Condition: Prior to extensive extirpation efforts, gray wolves were well distributed in northern Idaho. By the 1940s, wolves were virtually eradicated from the area. Currently, gray wolves north of Interstate 90 are listed as Endangered species and receive full protection in accordance with provisions of the Endangered Species Act. Gray wolves south of Interstate 90 are listed as part of an experimental population, with special regulations defining their protection and management.

Existing Conditions: The Whitebark Pine project occurs north of Interstate 90. The project area is outside lands designated for wolf recovery, but lies within the general region that provides linkage between recovery areas. Recent *confirmed* sightings of radio-collared lone wolves have been documented in the very northern part of the project area in winter of 2001-02 and spring of 2002. However, these sighting were approximately 6.0 miles from the nearest treatment site. Two unsubstantiated sightings of wolf tracks were documented in Long Canyon and Myrtle Creek prior to 1989. These sightings seem to indicate transient

individuals or lone wolves, detached from a resident pack. There is no evidence of resident wolf packs (i.e. lack of sightings or observations of reproduction, den sites and rendezvous sites) anywhere on the district or in the Selkirk Mountains.

Rationale for No Further Analysis: Wolves primarily feed on ungulates. The project area supports moose, elk and white-tailed deer as potential prey items. Although no specific population numbers are available, ungulates are common enough to provide an ample food supply for the occasional wolf that may visit the area.

The influences of the Whitebark Pine project would not impact critical winter cover conditions for white-tailed deer (see white-tailed deer discussion). Consequently, white-tailed deer populations would be relatively unaffected.

Open road densities would not change through implementation of this project. The maintenance of an adequate prey base and the existing open road densities would continue to provide for wolves and their habitat. In addition, the nearest substantiated sightings of transient wolves are approximately 6.0 miles from the nearest treatment site. Therefore, this project is unlikely to affect gray wolves or their habitat. No further analysis and discussion is warranted (refer to the Biological Assessment, project file).

Sensitive Species

FLAMMULATED OWL

Flammulated owls are seasonal migrants to northern latitudes during the spring and summer. Primary nesting habitat is comprised of the older forests dominated by ponderosa pine and Douglas-fir with 35-65% overstory canopy closure. Reynolds and Linkhart (1992) reported that all published North American records of nesting, except one, came from forests in which ponderosa pine trees were at least present, if not dominant in the stand. Flammulated owls depend on pileated woodpeckers and flickers to excavate the cavities in which they nest. Their nest trees are at least 14” in diameter (McCallum 1994). The flammulated owl's preference for the ponderosa pine/Douglas-fir cover type can also be linked to food availability. Reynolds and Linkhart (1992) noted a stronger correlation between prey availability and this cover type than with other common western conifer cover types. A nest stand needs to be a minimum of 35 acres in order to accommodate normal foraging, roosting, and territorial defense behaviors (Linkhardt 1984).

Flammulated owls appear tolerant to some human disturbances (Hayward and Verner 1994). This species has been known to nest in campgrounds and other areas of human activity with no apparent effects.

Reference Condition: No population numbers exist for this species’ historic presence. However, inferences can be made when comparing the historical occurrence of ponderosa pine with current levels. Based on historic vegetation estimates, ponderosa pine comprised 9.1% of the National Forest lands within the Kootenai sub-basin. The Whitebark Pine Project is located within this assessment area. Today, only 1.5% of the Kootenai sub-basin consists of sites that are predominately ponderosa pine (NZ Geographic Assessment, in prep.). This is an 84% decrease from historic conditions. Therefore, suitable flammulated owl habitat is probably less prevalent today than in the past.

Primary factors that have contributed to the loss of older ponderosa pine/Douglas-fir forests include fire suppression and intense forest management. Fire suppression has led to the advancing succession of species such as Douglas-fir and grand fir that crowd out ponderosa pine. In addition, dry, open-grown forests of ponderosa pine and Douglas-fir were common at lower elevations, on areas suitable for human settlement. These areas experienced intensive timber harvest, and the resulting access increased harvest of any large snags by firewood cutters.

Existing Conditions: The IPNF has completed a habitat suitability model to predict the amount of flammulated owl nesting habitat present within the Forest (model and assumptions in project file).

The project area incorporates some 1,497 acres in 37 stands of currently suitable flammulated owl habitat. All but 69 acres of this suitable habitat is found in patches of ≥ 35 acres. Currently, suitable habitat is found in the Myrtle, Ball, and Trout creek drainages.

District records include three locations of vocalizing flammulated owls, but these are all located in the Purcell Mountains. Given the fragmented nature of the currently available nesting habitat, flammulated owl populations are likely at very low densities within the project area.

Rationale for No Further Analysis: While there is capable flammulated owl habitat within the project area boundary, treatments would concentrate on high elevation stands rather than dry site ponderosa pine habitat. Consequently, the Whitebark Pine project would have ***no impact*** on flammulated owl individuals or habitat. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is necessary.

HARLEQUIN DUCK

Harlequin ducks are rare, seasonal residents of whitewater streams in the northern Rockies. They are small sea ducks that winter in coastal areas and migrate hundreds of miles inland to northern Idaho, western Wyoming and western Montana to breed and rear young. Harlequins nest along clear, clean, swiftly flowing remote mountain streams located away from concentrated human activities. Harlequins arrive in northern Idaho between March and May. After nesting begins in mid-May the males migrate back to the Pacific coast. Nesting continues through July, with the females rearing the young through late August or September, after which they return to the coast for the winter (Cassirer and Groves 1991).

The presence of harlequin ducks is considered an indicator of high water quality (USDA 1992). Management activities that impact stream quality, including those that could increase water yield beyond the stream's capability, have the potential to impact this species. Water quality standards relative to harlequins are primarily to protect their invertebrate food base and maintain hydrologic function. Harlequin ducks can also be affected by disturbance within approximately 200 feet (depending on density of streamside vegetation) of a nesting stream.

Reference Condition: The estimated breeding population of harlequin ducks in the Pacific Northwest and Rock Mountains includes a total of 70 breeding pairs (Cassirer 1996). Harlequin ducks were listed as a C2 candidate in 1991 by the U.S. Fish and Wildlife Service due to low numbers, limited distribution, and localized population declines.

Existing Condition: Harlequin duck staging and breeding habitats are concentrated in the Purcells and northern Selkirk zones on the Bonners Ferry RD. In northern Idaho these streams are usually associated with mature to old growth western red cedar/western hemlock or spruce/fir forest stands (Cassirer and Groves 1991). Nesting habitat includes very low gradient stream sections with braided channels, intact riparian areas with dense streamside shrub growth, and rich aquatic insect populations (Cassirer and Groves 1991). Turbulent stream sections are used for security and feeding. Sightings of harlequin ducks have been confirmed for the Smith Creek and Long Canyon drainages within the project area.

Rationale for No Further Analysis: Smith and Long Canyon Creeks are prominent streams in the project area. However, actual treatment areas for this project are located along ridgelines some 2,500 feet and greater away from these streams, and would take place outside the breeding/brood rearing time period. Hence, disturbance and impacts to water quality would be insignificant. Consequently, the Whitebark Pine project would have ***no impact*** on harlequin ducks. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is necessary.

NORTHERN GOSHAWK

The northern goshawk is a forest habitat generalist that uses a wide variety of forest ages, structural conditions and successional stages, inhabiting mixed coniferous forests in much of the northern hemisphere (Reynolds et al. 1991). Throughout North America, goshawk nest sites have consistently been associated with the later stages of succession (mature and old growth trees) in moderate to high tree densities (Warren 1990). Old growth is important for northern goshawks because it provides prey species habitat and large trees for their substantial nests. Foraging habitat includes a wide range of forest age structures that provide a relatively open forest environment for unimpeded movement or flight through the understory. Open areas within 300 feet of the forest edge are fully usable by goshawks for foraging. Openings more than 1,500 feet from the forest are usually not used for foraging.

Reference Condition: No data are available on historic goshawk populations. However, inferences can be made when comparing the historical occurrence of mature and old growth with current levels within the Kootenai sub-basin. The Whitebark Pine Project is located within this assessment area. Mature and old growth forest habitats historically comprised approximately 23 and 25%, respectively, of the historic landscape. Today they comprise 30 and 17%, respectively (NZ Geographic Assessment, in prep.).

Nesting habitat is the most critical and limiting habitat feature for goshawks. It is recommended that habitat be provided for at least one pair of nesting goshawks in each 10,000-acre area of suitable forest, with at least 2 suitable nest stands (≥30 acre patch size) per 5,000 acres (Warren 1990). Currently modeling of suitable goshawk habitat within the

Kootenai sub-basin indicates that recommended standards for nesting are likely being met at the zone level (Table 7).

Twenty-eight goshawk territories, some with multiple nests, have been documented on the Bonners Ferry Ranger District since 1979. Canopy cover of 40-90% has been documented within these nest stands. Nest trees are typically found in live, large diameter (≥14") Douglas-fir, western larch, western red cedar, or western hemlock. Live trees are preferred because of the overstory canopy protects eggs and nestlings from inclement weather and aerial predators.

Table 7. Capable & suitable northern goshawk nesting habitat - Kootenai Sub-basin.

KOOTENAI SUB-BASIN	Capable Habitat (Acres)	Suitable Habitat (Acres/% of Capable)
Northern Selkirk Zone	50,312	10,885 / (22)
Purcell Mountains Zone	67,262	6,603 / (10)
McArthur Zone	6,766	576 / (9)
Boulder Zone	19,268	2,397 / (12)
Kootenai Valley	586	38 / (6)
SUB-BASIN TOTAL:	**134,194**	**20,499 / (15)**

Current Conditions: The Whitebark Pine project area includes a minimum of some 5,543 acres of currently suitable nesting habitat for goshawks. The area also includes good foraging habitat quality because of the broken topography, mixed mesic and slightly xeric habitats, and mixed age classes including openings.

Table 8. Capable & suitable northern goshawk nesting habitat - Whitebark Pine Project Area.

WATERSHED	Total Size (Acres)	Capable Habitat (Acres)	Suitable Habitat (Acres/% of Capable)
Ball Creek	17,006	4,248	857 / (20)
Burton Creek	7,523	1,701	418 / (25)
Fisher Creek	6,955	737	233 / (32)
Long Canyon	20,767	2,741	1,198 / (44)
Myrtle Creek	23,643	8,561	2,127 / (25)
Parker Creek	12,531	921	349 / (38)
Smith/Cow Creeks	32,943	9,007	2,259 / (25)
Trout Creek	13,969	1,352	229 / (17)
TOTAL:	**135,337**	**29,274**	**7,670 / (26)**

As mentioned previously, nesting habitat is considered the most critical and limiting habitat feature for goshawks. Nesting habitat was evaluated using a habitat suitability model derived from data in the Forest timber stand database (TSMRS). This database was updated to reflect any changes in condition identified by field walk-through exams (stand condition field notes, project file). Modeling rules and assumptions can be found in the project file. Currently modeling of suitable goshawk habitat within the Whitebark Pine project area indicates that recommended standards for nesting are likely being met at the project level (Table 8).

Of the 28 documented territories on the district, 23 have experienced some level of successful breeding during the last decade. Nine of these 23 are situated within the project area, however, these nest stands are ≥2,500 feet from proposed activities. There have been intensive goshawk surveys throughout the district in 1988-89,1995-97, and 2002.

Rationale for No Further Analysis: While goshawks have been recorded in and around the project area, the proposed activities are located along ridgetops in forests that do not provide goshawk nesting habitat. Helicopter traffic would be minimal and after the sensitive spring/summer (March15-August 15) nesting/fledging time period. Consequently, the Whitebark Pine project would have ***no impact*** on the northern goshawk. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is warranted.

WHITE-HEADED WOODPECKER

Like the flammulated owl, the white-headed woodpecker occurs in the drier forest types dominated by pine trees in the mountains of far western North America. Abundance appears to decrease north of California. They are generally uncommon or rare in Washington and Idaho and quite rare in British Columbia. Snags and relatively open-canopied conditions are important habitat components for both species (Idaho Partners in Flight 2000).

Current Conditions: Modern forestry practices including clearcutting, snag removal and fire suppression have fragmented the forest and contributed to local declines of the species, particularly north of California (Garrett et al. 1996). However, this species persists in burned or cutover forests with residual snags and stumps. Therefore, populations are more tolerant of disturbance than those species associated with closed-canopy forests (Raphael et al. 1987).

Rationale for No Further Analysis: The influences of the Whitebark project would not impact dry site ponderosa pine habitat. Consequently, the Whitebark Pine project would have ***no impact*** on white-headed woodpecker. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is necessary.

FISHER

Fisher are a medium-sized forest carnivore. They tend to be opportunistic predators, eating anything they can catch. Their major prey tends to be small to medium sized mammals, birds, and carrion. Fishers are found only within North America and presently occur from southern Canada south into the northwestern states, California and the Great Lakes States. Fishers occur most commonly in landscapes dominated by mature to old forest cover. Within the Pacific States and Rocky Mountains they appear to prefer late-successional coniferous forests in the summer and mid to late-successional forests in winter.

Fishers prefer habitats with high canopy closure and avoid areas with low canopy closure (Powell 1982). They also have been known to use riparian areas disproportionately more than other habitats. In north-central Idaho, grand-fir and spruce forests were preferred by fishers, with elevations from approximately 3,000 to 5,000 feet being used (Jones 1991). The habitat requirements of fishers are thought to be more associated with the physical structure of the forest and associated prey. This structure includes the vertical and horizontal complexity created by a diversity of tree sizes and shapes, 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. The home ranges for fishers vary with prey densities. Studies indicate that the mean home range for adult males is 40 square kilometers; this is nearly three times that of females, which is 15 square kilometers.

Fishers tend to avoid human presence and generally are more common where the density of humans is low and human disturbance is low. Fishers are easily trapped. Where populations are low, the trapping of coyote can jeopardize fisher populations, fox, bobcat and American marten (Powell and Zielinski 1994). Habitat security, in the form of low road densities, reduces the risk of this occurrence because trapping areas are limited.

Current Conditions: No accurate estimates or records exist for historic fisher populations. Extensive alteration of forest structure due to natural and human-caused disturbances (i.e. fire, timber harvesting) has altered the habitat value for fisher, especially in the riparian areas.

Fisher have been documented on two occasions in the Bonners Ferry Ranger District, but both of these sightings were outside of the project area.

Rationale for No Further Analysis: While good habitat exists within the project area for fishers, the proposed activities are located along ridgetops in forests that do not provide ideal fisher habitat. In addition, the exclusion of Riparian Habitat Conservation Areas (RHCAs) from slashing treatments would protect and maintain fisher habitat in the high elevation riparian areas associated with project treatments. General disturbance to fishers in the area from helicopter traffic would be minimal (<5 days/year) and sawing crew activity would be constrained to a 1-2 week time period/per treatment site in late summer and early fall. Consequently, the Whitebark Pine project would have ***no impact*** on fishers. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is warranted.

WOLVERINE

Wolverines are low density, wide-ranging species that inhabit remote forested areas, ranging over a variety of habitats. Wolverines tend to use lower elevations in the winter and

higher elevations in summer, when these areas provide the greatest potential for a food supply (Hornocker and Hash 1981).

Wolverine 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 shooting loss or incidental take by trapping (wolverines are occasionally taken by trappers focusing on other furbearers such as bobcat and American marten). Other factors with the potential to threaten local population viability of the species include reductions of "wilderness refugia" (large areas of habitat with limited human access) or food availability (Butts 1992).

Rationale for No Further Analysis: As with lynx, wolverines require large, remote areas to roam and feed. The project area is located on a relatively large portion of National Forest lands that includes a checkerboard of private industry lands in Myrtle and Smith Creek drainages.

Although wolverines have been sighted within the project area on two occasions, wolverines are likely to be transient in the area because of their wide-ranging nature. Consequently, the risk of human/wolverine interactions would be relatively low. Access would be unaltered during implementation of the treatments, so the risk of mortality to wolverines would not increase. While treatment sites are located along high elevation ridgelines, treatments will not alter the characteristics of high elevation cirque basins used as wolverine denning and natality sites. Treatments in these areas would not take place during the natality period (winter), and there would be no increase in winter recreation access from this project. General disturbance to wolverines in the area from helicopter traffic would be minimal (<5 days/year) and sawing crew activity would be constrained to a 1-2 week time period/per treatment site in late summer and early fall. Consequently, the Whitebark Pine project would have ***no impact*** on the wolverine. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. No further analysis and discussion is necessary.

BOREAL TOAD

Boreal toads require shallow water in ponds, lakes or slow-moving streams for breeding sites. Boreal toads lay their eggs in the warmest water available, typically less than 20 inches deep (Corkran & Thoms 1996). 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 kilometers (about 1 mile) from their natal ponds; it also showed that toads avoided crossing clear cuts (Bartelt 1994). Boreal toads in Colorado have been documented traveling up to 2.5 miles away (Loeffler 1998).

The biggest potential barrier to their movements is a road. Steep road cuts can be a barrier to toads moving between seasonal habitats. Juvenile toads are vulnerable to being killed by motorized vehicles when they are dispersing from their natal ponds.

Rationale for No Further Analysis: Boreal toads have been documented in numerous spots throughout the project area, including ditchlines, ponds, and some streams. In this

project, standard widths defining Riparian Habitat Conservation Areas (RHCAs) as outlined in the Inland Native Fish Strategy (USDA 1995) will be applied. No ignitions will take place in riparian areas. No roads will be built. Under this approach, there are adequate design criteria and mitigation measures to protect boreal toads and their habitat. Consequently, the Whitebark Pine project would have ***no impact*** on boreal toads. Since individuals and populations would be unaffected at a local level, species viability would not be threatened. Therefore, no further analysis and discussion is warranted.

Other Management Indicator Species

PILEATED WOODPECKER

Pileated woodpeckers are relatively common in both cut and uncut mid-elevation forests. They appear to do well in a matrix of forest types (Hutto 1995). However, since foraging habitat occurs in a wider ecological range of forest age structures, nesting habitat is considered the most critical and limiting feature for pileated woodpeckers.

The pileated woodpecker was selected as a MIS because its highest densities occur in old-growth forests and their resultant need for large dead trees for nesting and dead woody material (standing and down) for foraging (Bull 1987). Specific requirements for nesting include large trees in relatively uncut stands with nest cavities usually located more than 30 feet above the ground - at a level with the canopy of the surrounding forest (Warren 1990).

Rationale for No Further Analysis: Although the project area includes a matrix of mid-elevation forests with suitable nesting habitat, treatment sites are situated in high elevation subalpine fir-whitebark pine forests with little value for pileated woodpeckers. Consequently, implementation of the whitebark pine project would not impact pileated woodpeckers. There would be no loss of nesting or foraging habitat for pileated woodpeckers, and mortality risk would be negligible. Therefore, species viability would be maintained. No further analysis and discussion is necessary.

AMERICAN MARTEN

The marten is a solitary carnivore that inhabits mature stands of coniferous forest throughout North America. In the western United States, marten are most abundant in mature to old growth true fir or spruce-fir forests and generally avoid open, dryer coniferous forests (Warren 1990). They prefer forest stands greater than 40 percent tree canopy closure that protects them from predators and enhances the moist conditions favorable for prey species (Clark et al. 1989).

Rationale for No Further Analysis: Because of habitat similarities with fisher, the American marten would be treated as a guild with fisher in this document.

ROCKY MOUNTAIN ELK

Elk are widely distributed within the Idaho Panhandle National Forests and, like deer, move seasonally in response to weather patterns and food availability. However, because of their greater foraging ability and mobility, elk will use higher elevations more than deer during the

winter period. During the summer period there is a general relaxation of habitat requirements and a broader use of available habitats.

Reference condition: Early records indicate that Rocky Mountain elk occurred throughout most of Idaho. However, large herds were apparently absent from the narrow, northern portion of the State (Thomas and Toweill 1982). With the discovery of gold in Pierce, Idaho in 1860, and the subsequent settlement and exploitation, elk numbers were reduced to a few isolated herds in the State. A translocation program was initiated in 1915 and proceeded through 1946. Today, elk populations exceed their distribution and population levels of a century ago (Thomas and Toweill 1982). In fact, their numbers are regulated by harvest, and are probably near all-time highs in Idaho (Compton 1999).

Beginning in the 1970s, accelerated timber harvest and associated road building have brought about mounting conflicts with elk populations. People using highly roaded areas are the single largest threat to big game populations, making them vulnerable to poaching, stress, hunting, accidents and displacement (Leege 1984). Other studies have clearly linked elk mortality rates with road access. Leptich and Zager (1991) found consistent patterns of increased bull mortality rates with increased open road densities.

Existing Condition: Although elk populations are generally higher today than 100 years ago, high open road densities have increased elk vulnerability to hunting loss and have led to over-harvesting of some local populations. The heavy losses experienced during the winter of 1996-1997 have further stressed the importance to manage low road densities.

The Whitebark Pine project area lies within Game Management Unit 1. Idaho Department of Fish and Game's elk management objective for Unit 1 and other game management units is to recover elk populations, which experienced heavy losses during the 1996-97 winter season. Since that time, recovery has been slow. According to Cole (pers. com. 2000), the 1999 elk rifle season had the lowest hunter success on record.

The proposed action would create an ephemeral disturbance in areas only sporadically utilized by elk, and would cause no increase in road density or loss of elk security. Therefore, the Whitebark Pine project is not expected to impact Rocky Mountain elk or their habitat. Since Rocky Mountain elk have a regulated hunting season, it is assumed that viability of this species is not threatened. No further analysis and discussion is necessary.

WHITE-TAILED DEER

White-tailed deer are very adaptable and prolific, and thrive in a variety of habitat types. They are tolerant to disturbances such as agriculture and forestry practices, and prefer areas modified by these activities, if an adequate arrangement of cover and forage is available.

Climatic factors affect the seasonal variation of forage quality and quantity, accessibility to foraging areas and the energetic requirements of the animal (Pfingsten 1983). Winter is the most limiting and stressful period for big game. It is during this period when forage is scarce and travel is energetically very expensive because of snow accumulations. Consequently, in an effort to ameliorate conditions, deer locate themselves on lower elevations, concentrating on smaller, more confined areas known as critical winter range.

Reference Condition: Historically, white-tailed deer flourished in the 1800s, but by the early 1900s their populations were reduced to low numbers due to over-exploitation by trappers, miners and settlers. White-tailed deer populations have since rebounded to being the most abundant big-game species in northern Idaho. Some of the largest white-tailed deer populations occur in the northern panhandle of Idaho. In 1985, the Idaho Department of Fish and Game estimated that 99% of the State's population was found in the Department's two northern regions.

Current Condition: The majority of the Whitebark Pine project area is located at elevations above 3,000 feet and outside recognized critical winter range boundaries. Critical winter range is generally found at lower slopes and on valley floors below 3,000 feet where snow accumulations are moderate enough to sustain white-tailed deer populations.

Rationale for No Further Analysis: Since white-tailed deer populations are prospering in north Idaho and the proposed actions would not impact critical winter range areas, no further discussion and analysis are necessary. Like elk, the existence of a regulated hunting season infers that white-tailed deer population viability is being maintained.

SNAG HABITAT

Snags, or standing dead trees, are vital components of the forest ecosystem. In the Interior Columbia River basin they provide habitat for more than 80 species of birds, mammals, reptiles, and amphibians and play a critical function in long-term site productivity (Bull et al. 1997). Many forest-dwelling animals use these structures for nesting, foraging, denning and roosting.

Most notable users of this habitat are primary excavators, such as hairy woodpeckers and Northern flickers, which create cavities in decaying wood of standing trees. These cavities are subsequently used by other wildlife species once the primary excavators have abandoned them (Bull et al. 1997). Fallen snags or dead and down woody material have important ecological functions including nutrient cycling, nitrogen fixation, and wildlife habitat.

Historically, ecosystems in north Idaho were shaped by disturbance patterns that altered the size and distribution of forest structure across the landscape. Forest succession, wind damage, fire, insects and disease created snags in areas that ranged in size from individual trees or small patches, to entire drainages. Consequently, snag densities vary across the landscape, from areas with low densities to other areas with high densities.

Snag habitat associated with the Whitebark Pine project area has been strongly influenced by fire and the subsequent changes in vegetation composition. The severe fires of the 1800s left much of the landscape in early stages of forest development. A large lethal and mixed-severity fire in the 1850s probably left a lot of snags across the landscape. This change in condition likely increased, temporarily, the breeding densities of black-backed woodpeckers.

Although this stand-replacing fire provided a pulse of hard snags, it disrupted the continuity and sustainability of snag production that would occur during the predicted sequence of vegetation change. Because most snags generally do not persist long after a catastrophic fire, black-backed woodpecker populations probably dispersed from the burn areas within

several years following the fire. Morrison and Raphael (1993) found that snags created by fire fell sooner than non-fire-created snags. Burning at their base probably weakens snags created by fire. Also, snags in large burned areas are directly exposed to wind, causing them to fall sooner than snags surrounded by live trees. In addition, subsequent large-scale fires likely consumed most of the remaining snags on the landscape.

Design features of the project were devised to ensure the retention and selection of snags at a level and distribution to support viable populations of species that use snags and logs. Snags and snag replacements would be retained in all treatment units at levels recommended by the Region 1 Snag Management Protocol. The Snag Protocol recognizes that not all stands are able to meet snag guidelines, but that the overall goal is to provide adequate snag habitat over the landscape. Snag retention objectives exceed Forest Plans standards and snag retention levels developed by Thomas et al. (1979).

Potential effects to snag habitat are addressed in detail in descriptions of snag-dependent species (pileated woodpecker, flammulated owl, northern goshawk and fisher), and in the analysis of effects upon black-backed woodpecker.

FOREST LAND BIRDS

Hejl (1994) acknowledges that while we do not know all of the specifics of bird-habitat relations, we do understand many principles of forest management that would help maintain a healthy forest for most bird species. These include practices such as encouraging old-growth characteristics, leaving snags and replacement trees, leaving or planting the natural diversity of trees found in the area, burning and allowing fires to happen in a manner similar to natural fire regimes, and mimicking natural landscape patterns. While no single forest condition or structural type will benefit all species simultaneously, providing a mosaic of habitat conditions and age classes can improve habitat values for forest birds.

Reference Condition: Idaho has 243 species of birds that breed in the state (Idaho Partners in Flight 2000). A diversity of vegetation and topography results in a diversity of species. While all birds are important for their roles in the ecosystem, not all birds and habitats are equal when it comes to threats to their persistence. Idaho Partners in Flight (IPF) has identified and prioritized four habitats that represent species of moderately to high vulnerability, and species with declining or uncertain population trends. These prioritized habitats include riparian habitat, non-riverine wetlands, sagebrush shrub, and dry ponderosa pine/Douglas-fir/grand fir forests (Idaho Partners in Flight 2000).

Current Condition: Two priority habitats occur in the Whitebark Pine project area: riparian habitat and dry ponderosa pine/Douglas-fir/grand fir forests. However, these priority habitats would not be adversely affected by the proposed actions. Applying Best Management practices and the Inland Native Fish Strategy (INFS) would protect and maintain riparian habitat that occurs in the treatments areas for the project (see Chapter II – Features Common to All Action Alternatives section).

Rationale for No Further Analysis: Because this project would not cause a loss of riparian habitat or dry ponderosa pine/Douglas-fir/grand fir forests, no further discussion and analysis are necessary.

B. Botany

Biological Assessment, Threatened and Endangered Plant Species
Whitebark Pine Restoration Project Environmental Assessment

Introduction

The purpose of this assessment is to evaluate and describe potential effects of Alternative 4 (the preferred alternative) of the Whitebark Pine Restoration Project Environmental Assessment (EA) on threatened or endangered plant species, and to determine whether any such species or habitat is likely to be affected by the proposed action. This assessment was prepared in accordance with USDA Forest Service policy (FSM 2672.4).

According to the US Fish and Wildlife Service (USFWS), three federally listed threatened plant species may be present and are suspected to occur in the Bonners Ferry Ranger District (USDI 2004) -- Water howellia (*Howellia aquatilis* A. Gray) and Spalding's catchfly (*Silene spaldingii* Wats.). There are no endangered plant species known or suspected to occur in the district.

Proposed Action

The Forest Service proposes the following treatments in the Whitebark Pine Restoration Project:

- Whitebark pine release (slashing without burning) would occur on approximately 388 acres
- Slashing and burning would occur on approximately 1,045 acres

In addition, there would be 297 acres of potential secondary burn. Secondary burn refers to the area surrounding the slash and burn units that could potentially burn during the prescribed fire phase of the treatment.

Maps showing the location of proposed treatment units are included in the Whitebark Pine Restoration Project EA.

Listed Threatened Plant Species

Water howellia (Howellia aquatilis) - a member of the family Campanulaceae, is suspected to occur in the Kootenai subbasin ecosystem. According to the Conservation Strategy for Howellia aquatilis - Flathead National Forest (USDA 1994), there are currently 110 known occurrences of the species; most occurrences are in Montana and Washington, with only one known occurrence in Idaho.

Water howellia is an annual aquatic species restricted to small pothole ponds or the quiet water of abandoned river oxbows. It occurs at elevations from 10 feet in Washington to 4,420 feet in Montana. The species reproduces only by seed; germination occurs in October, presuming the plant's habitat has dried sufficiently to expose the seeds to oxygen.

Because of this restrictive habitat requirement, population numbers in a given year are directly influenced by the extent of pond drawdown at the end of the previous growing season (USDA 1994).

No potential habitat for water howellia occurs in the Decision Area, which is characterized by mid- to high-elevation stands at midslope to ridgetop positions.

Spalding's catchfly – a member of the plant family Caryophyllaceae, occurs in dry grassland habitats and grassland inclusions in ponderosa pine and Douglas-fir forest. Suitable habitat for this species is typically dominated by fescues (Festuca species) and other bunchgrasses, but also has a high density of forbs. Soil types on which it has been found include loam, silty loam, granitic, loamy basaltic and loess (USDI 2000).

This long-lived perennial forb often exhibits periods of dormancy (both within a growing season and over several growing seasons), which can render habitat clearance surveys problematic (Lesica 1997). Periodic dormancy may allow individuals to persist below ground during drought years (Lesica 1997).

Potential threats to its habitat include conversion to agricultural, residential or other uses; overgrazing; soil compaction and other ground disturbance; exotic species invasion; herbicide use; and activities which would negatively impact the species' pollinators (Lichthardt 1997). Wildfire and prescribed fire may also be detrimental to individuals, although fires may benefit the species by burning off heavy accumulations of duff and litter which impede germination and seedling growth (Lesica 1999).

Because habitat for Spalding's catchfly cannot be accurately determined using Timber Stand Database information, a Forest-wide habitat analysis was conducted using Satellite Imagery Landtype Classification (SILC). This reflection of the species' habitat occurrence and distribution is an approximation and serves as a coarse filter for habitat suitability. Further review of areas identified by SILC, such as aerial photograph interpretation and field verification, may be necessary to determine the true extent of suitable habitat for Spalding's catchfly.

Based on evaluation of SILC and aerial photographs of the Decision Area, habitat for Spalding's catchfly does not occur in or adjacent to the Decision Area.

On-site Inspection

Floristic surveys of the Decision Area were conducted in the fall of 2000 and in the summer and fall of 2001. All plant species encountered were recorded during the surveys. The surveys targeted areas proposed for treatment activities. No listed plant species were identified, and the Decision Area was confirmed as having no potential to support any listed plant species.

Analysis of Effects

Water howellia - There is no potential habitat for this species within the Decision Area. This species has not been found in the Kootenai subbasin ecosystem. No direct, indirect or cumulative effects would be expected from project implementation.

Spalding's catchfly – There is no potential habitat for Spalding's catchfly in the Decision Area and limited potential for its occurrence in the Kootenai subbasin ecosystem. No direct, indirect or cumulative effects to the species or suitable habitat would be expected to occur from project implementation.

Determination of Effects

No sightings of water howellia or Spalding's catchfly have been documented in the Decision Area. The Decision Area has no potential habitat for their occurrence.

Based on the above considerations, implementation of Alternative 4 would have no effect on water howellia or Spalding's catchfly or their habitats.

Prepared by: Anna E. Hammet, IPNF North Zone Botanist

Sensitive Species Biological Evaluation Summary Of Conclusion Of Effects**

Project Name: Whitebark Pine Restoration Project **Alternative**: 4

Species	No Impact	May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Toward Federal Listing Or Loss Of Viability To The Population Or Species	Will Impact Individuals Or Habitat With A Consequence That The Action May Contribute To A Trend Toward Federal Listing Or Cause A Loss Of Viability To The Population Or Species*	Beneficial Impact
1. Aquatic species	X			
2. Deciduous Riparian species	X			
3. Moist Forest species, except # 4	X			
4. *Botrychium* species		X		
5. Wet Forest species	X			
6. Dry Forest species	X			
7. Peatland species	X			
8. Subalpine species, except # 9		X		
9. *Cetraria subalpina*		X		
10. Cold Forest species		X		

Comments: Rationale is contained within the NEPA document; a detailed sensitive plants report is located in the Project File.

C. Fisheries

The fisheries BE/BA is summarized below, the complete document is located in the project file.

The U. S. Fish and Wildlife Service (FWS) lists two fish species that occur and/or habitat exists within the Kaniksu portion of the Idaho Panhandle National Forests as endangered or threatened under the Endangered Species Act (ESA) of 1973 (Biannual Forest Wide Species List: FWS 1-9-04-SP-219; April 14, 2004).

The Kootenai River population of the white sturgeon (Acipenser transmontanus) is listed as "endangered" (Federal Register, Volume 59, No. 171, September 6, 1994) and the Columbia River Distinct Population Segment of bull trout (Salvelinus confluentus) is listed as "threatened" (Federal Register, Volume 63, No. 111, June 10, 1998).

- White sturgeon and burbot are only found in the main Kootenai River in Idaho.

Four fish species are listed as "species of special concern" by FWS and as "sensitive" by the Regional Forester.

- Bull trout are in the main Kootenai River and have been found occupying habitat in Long Canyon, Trout, and Myrtle Creeks.
- Interior redband trout inhabit Kootenai River and some of its drainages. Based on genetic analysis (District Files 1994) they were not found to be occupying streams in the project area, but habitat is present.
- Westslope cutthroat trout inhabit Kootenai River and Parker, Trout, Ball, and Burton Creeks.
- Torrent sculpin inhabit Kootenai River and have been found in Myrtle Creek drainage below the falls barrier (Data - District files).

The proposed action and specific purpose and need for proposing the Whitebark Pine project area are described in Chapters 1 and 2 of the EA.

The preferred alternative (Alternative 4) includes the following treatments:

- 1,045 acres of slash and burn treatments,
- 388 acres of whitebark pine release treatments, and
- 0 acres of burn-only treatment.
- 297 acres of potential secondary burn area.

Total acres of treatment equals approximately 1,730 acres.
Secondary burn refers to the area surrounding the slash and burn, and burn only units that could potentially burn during the prescribed fire phase of the treatment, referred to as the secondary burn area in the table below.

Determination of Effects and Rationale

In this project, standard widths defining Riparian Habitat Conservation Areas (RHCAs) as outlined in the Inland Native Fish Strategy (INFS 1995) will be applied. No thinning or prescribed burning will take place in riparian areas. As a result, there will be no loss of riparian vegetation.

Whitebark Pine Release - This treatment would have no direct or indirect effects on aquatic resources.
Slash and Burn - Given the small percentage of the watersheds being treated, prescriptions and location of the proposed units, this treatment would have no direct or indirect effects on aquatic resources.
Potential for Escaped Fire - The potential for escaped fire, or high intensity burning is low for the slash and burn (see Vegetation and Fire, Environmental Consequences in Chapter 4). Given the predicted fire behavior, no adverse effects to soil structure (such as creation of hydrophobic soils) are expected. Any sediment produced would occur only in the small patches of torching or higher intensity burn areas. These areas would be well buffered by surrounding unburned or lightly burned fuels, which would effectively limit the movement of soil particles off-site.
Potential for Fire in RHCAs - Given the location of the proposed units (described above) and lack of stream channels in the immediate vicinity, the risk of any fires burning into the RHCAs is very low. Therefore, there would be no measurable direct or indirect effects to aquatic resources from fire activities associated with this project.
Activity on sensitive landtypes - No activity would occur on Landtype 103.

Summary of Conclusions

The treatment areas are located well above 4500' elevation, where rain-on-snow events do not pose a risk for any of the treatment areas for this project. Due to the design of the prescriptions and the percent of the total watershed actually treated, any potential increase in water yield would not be quantifiable and there would be no measurable effect in the duration and intensity of peak flows. Therefore, the project would have no direct, indirect and cumulative effects on water yield from implementation of this project. The treatments are located on ridge tops above any other activity occurring within the watersheds. Changes in sediment production or delivery are not expected from the proposed project because all management activities will be conducted outside of RHCA's.

Through the scope and analysis (information located in the EA and project file), it was determined that the direct, indirect, and cumulative effects will not be detected beyond the project area boundaries, consequently in no known drainages in the cumulative effects area. Therefore, the determinations of effects are as follows:

Federally listed species:

Species	No Effect	May Affect, Not Likely To Adversely Affect*	May Affect, Likely To Adversely Affect*	Beneficial Effect
Endangered:				
White sturgeon Acipenser transmontanus	**X**			
Threatened:				
Bull trout Salvelinus confluentus	**X**			

Sensitive Species:

Species	No Effect	May Impact Individuals, But Will Not Likely Result In A Trend Toward Federal Listing Or Reduced Viability For The Population Or Species	Likely To Impact Individuals Or Habitat With A Consequence That The Action May Contribute Towards Federal Listing Or Reduced Viability For The Population Or Species**	Beneficial Effect
Burbot Lota lota	X			
Interior redband trout Oncorhynchus mykiss gairdneri	X			
Westslope cutthroat trout Oncorhynchus clarki lewisi	X			
Torrent sculpin Cottus rhotheus	X			

APPENDIX C

This appendix contains the estimates of the crew production and time needed to implement the Whitebark Pine project. It also describes the Best Management Practices that would be required during implementation.

A. Crew Production Estimates for Project Implementation

For planning purposes number of crew days required to perform the slashing and thinning activities for this project were estimated, as shown in the following tables. The estimates are based on the following assumptions.

- Crew size = 5 to15 people/day
- Production/Person/Day = 1 to 2 acres
- Production/Crew/Day = 5 to 30 acres
- Average Production per Crew per Day = 15 acres
- Treatment Area = 25-50% of total unit acreage
- All ignitions would be through the use of a helicopter equipped with either a plastic sphere dispensing device or a helitorch.

Table 1 - Alternative 2 Crew Production Estimates

Treatment Area	Total Acres	Treatment Acres	Type of Treatment	Crew Days Estimated*
Cutoff Peak	445	111-222	Partial Slash/Burn	7-15
Long Canyon	278	69-139	Burn Only	5-9
Fisher-Farnham	1,634	408-817	Partial Slash/Burn	27-55
Ball Lakes	621	155-310	Partial Slash/Burn	10-21
Russell Peak	260	65-130	Partial Slash/Burn	4-9
Burton Creek	108	27-54	Partial Slash/Burn	2-4
Burton Peak	330	82-165	Partial Slash/Burn	5-11
Myrtle Peak	639	160-320	Partial Slash/Burn	11-21
Myrtle Ridge	490	122-245	Partial Slash/Burn	8-16
Trout Lake	351	88-175	WBP Release	6-12
Russell Ridge	64	64	WBP Release	5
Fisher Peak	334	84-167	WBP Release	6-11
Totals	5,554	1,435-2,808		96-189

Table 2 - Alternative 3 Crew Production Estimates

Treatment Area	Total Acres	Treatment Acres	Type of Treatment	Crew Days Estimated*
Cutoff Peak	143	35-72	Partial Slash/Burn	3-5
Farnham Ridge	196	49-98	Partial Slash/Burn	4-7
Long Canyon	213	213	Burn Only	0
Big Fisher	165	41-82	Partial Slash/Burn	3-6

Treatment Area	Total Acres	Treatment Acres	Type of Treatment	Crew Days Estimated*
Ball Lakes	203	51-101	Partial Slash/Burn	4-7
Russell Peak	230	57-115	Partial Slash/Burn	4-8
Burton Ridge	108	27-54	Partial Slash/Burn	2-4
Russell Ridge	64	64	WBP Release	5
Fisher Peak	334	84-167	WBP Release	6-12
Totals	1,656	461-859		31-54

Table 3- Alternative 4 Crew Production Estimates

Treatment Area	Total Acres	Treatment Acres	Type of Treatment	Crew Days Estimated*
Cutoff Peak	143	35-72	Partial Slash/Burn	3-5
Farnham Ridge	196	49-98	Partial Slash/Burn	4-7
Big Fisher	165	41-82	Partial Slash/Burn	3-6
Ball Lakes	203	51-101	Partial Slash/Burn	4-7
Russell Peak	230	57-115	Partial Slash/Burn	4-8
Burton Ridge	108	27-54	Partial Slash/Burn	2-4
Russell Ridge	64	64	WBP Release	5
Fisher Peak	334	84-167	WBP Release	6-12
Totals	1,443	408-753		31-54

The treatment of these various areas will most likely occur over several years. For example, if the implementation of Alternative 3 or 4 will take 3 years to complete, an estimated 10-18 crew days per year will be needed to complete the needed fuels work prior to burning.

Prepared by: Patrick Cooley (co-project leader and fuels planner), June 20, 2002

B. Site Specific Best Management Practices

PRACTICE 14.03 - Use of Treatment Area (Sale Area) Maps for Designating Soil and Water Protection Needs

OBJECTIVE: To delineate the location of protection areas and special treatment areas, to insure their recognition, proper consideration, and protection on the ground.

EFFECTIVENESS: High

COMPLIANCE: No related FPA rule

IMPLEMENTATION: The following features will be designated on the treatment area map:

a) The stream courses (perennial, intermittent, and ephemeral) listed below will be designated as Stream Course Protection areas. During layout of treatment units these areas will be excluded where possible. Where these areas cannot be easily excluded from the unit, they will be excluded by designating the whitebark pine as leave trees. INFS (1995) standards and guidelines to protect stream courses will be applied to the following areas:

    i. Any unnamed channels that are shown on the sensitive landtype map; the channel dissections to the top of the inner gorge; the entire mainstem length and its tributaries for the following watersheds: Cutoff, Canyon, Trout, Ball, Burton, Myrtle, Parker, Fisher, and unnamed Creeks;

    ii. Wetlands (meadows, lakes, potholes, etc.) to be protected are those designated on the Fish and Wildlife Service 1:24000 scale wetland maps and by INFS standards;

    iii. Ephemeral channels will be protected through unit layout, marking plans, and/or designation on treatment area maps.

The district Fire Management Officer and TSI crew supervisor will review these features on the ground prior to treatment.

A forest or district watershed specialist will work with the TSI Forester to insure that the above features have been designated on the Treatment Area Map.

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 FPA Rule

IMPLEMENTATION: Forest Service, other crews, or both, are used to prepare the units for burning. The interdisciplinary team identifies Riparian Areas and soils with water repellant tendencies as part of the environmental analysis.

Some of the techniques used to prevent soil erosion and water quality degradation are:

- construct water bars in fire lines;
- reduce fuel loadings in drainage channels;
- maintain the integrity of the Riparian Areas;
- avoid intense fires, which may promote water repellency, nutrient leaching, and erosion;
- retain or plan for sufficient ground cover to prevent erosion of the burned sites
- removal of all debris added to stream channels as a result of prescribed burning, unless debris is prescribed to improve fisheries habitat.

i. Foaming agent will not be used in Myrtle Creek above the diversion for city water. Foaming agents (if used outside of Myrtle Creek) will not be used for water control lines where any of the ephemeral channels could carry the material to intermittent or perennial streams.

ii. Maintain large organic debris appropriate to the habitat type (see "Managing Coarse Woody Debris in the Forests of the Rocky Mountains" by Graham et. al. 1994).

iii. Limit prescribed burning to those times when surface soil moisture is above 25 percent to reduce the potential for damage from hot burns.

APPENDIX D

RECREATION OPPORTUNITY SPECTRUM (ROS) CHART

SETTING INDICATORS ☻			OPPORTUNITY CLASSES									
			Primitive			Semi - Primitive Non - Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
PHYSICAL	Size	P-1	5,000 acres	5,000 acres	5,000 acres	2,500 acres	1,000 acres or less	2,500 acres	No size criteria	2,500 acres	No size criteria	No size criteria
	Remote-ness	P-2 *Sight and Sound*	An area designated at least 3 miles from all roads, railroads or trails with motorized use, out of sight and sound of human activity.	An area designated at least 3 miles from all roads, railroads or trails with motorized use, out of sight and sound of human activity.	An area designated at least 3 miles from all roads, railroads or trails with motorized use, out of sight and sound of human activity.	An area designated at least ½ mile but not further than 3 miles from all roads, railroads or trails with motorized use; can include the existence of primitive roads and trails if usually closed to motorized use.	An area designated within ½ mile of primitive roads with motorized use; does not include motorized use; does not include motorized trail use. Distant sight and sound of human activity. Less than ½ hour walk from any motorized activity.	An area designated within ½ mile of primitive roads or trails used by motor vehicles; but not closer than ½ mile from better than primitive roads. Distant sight and sound.	An area designated within ½ mile from better than primitive roads and railroads. Remoteness of little relevance.	An area designated within ½ mile of "open to motorized use:" roads. Roads within area are closed to motorized use. Distant sight and sound of human activity.	No distance criteria. Remoteness of little relevance.	No distance criteria. Remoteness of little relevance.

SETTING INDICATORS ☺			OPPORTUNITY CLASSES									
			Primitive			Semi - Primitive Non - Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
PHYSICAL	Evidence Of Humans ↓	P-3 *Setting*	Unmodified natural environment	Unmodified natural environment	Setting is essentially an unmodified natural environment. Evidence of humans would be unnoticed by an observer wandering through the area.	Natural setting may have subtle modifications that would be noticed but not draw the attention of an observer wandering through the area.	Natural setting may have moderate modifications which will draw the attention of non-motorized observers.	Natural settling may have moderately dominant alterations but would not draw the attention of motorized observers on trails within the area.	Natural setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However, from sensitive travel routes these alterations would remain unnoticed or visually subordinate.	Natural setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However, from sensitive travel routes these alterations would remain unnoticed or visually subordinate.	Natural setting is culturally modified to the point that it is dominant to the sensitive travel rout e observer. May include pastoral, agricultural, intensively managed wildland resource landscapes or utility corridors. Pedestrian or other slow moving observers are constantly within view of culturally changed landscapes.	Setting is strongly structure dominated. Natural or natural-appearing elements may play an important role but be visually subordinate. Pedestrian and other slow moving observers are constantly within view of artificial enclosure of spaces.
	Evidence	P-4 *Evi-dence of Trails*	No evidence of trails	No evidence of trails.	Evidence of trails is acceptable, but should not exceed standard to carry expected use.	Little or no evidence of primitive roads and the motorized use of trails and primitive roads.	Little or no evidence of primitive roads and the motorized use of trails and primitive roads.	Strong evidence of primitive roads and the motorized use of trails and primitive roads.	There is strong evidence of designed roads and/or highways.	Evidence of primitive roads but motorized use is not allowed.	There is strong evidence of designed roads and/or highways.	There is strong evidence of designed roads and/or highways.

SETTING INDICATORS ☺			OPPORTUNITY CLASSES									
			Primitive			Semi - Non - Primitive Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
PHYSICAL	Of Humans ↓	P-5 *Visual Quality*	Cross-country hiking is the norm	Cross-country hiking is the norm.	Access via non-motorized trails is the norm.	Access via non-motorized trails is the norm.	Access via non-motorized trails is the norm.	Access via motorized trails and primitive roads is the norm.	Access via primitive roads which provide challenge to 4-wheel drive vehicles but discourage use by highway vehicles is the norm.	Access via non-motorized trails or roads is the norm.	Full access.	Full access is the norm.
		P-6 *# of Camp-sites*	Structures are non-existent.	Structures are extremely rare and isolated.	Structures are extremely rare and isolated.	Structures are rare and isolated.	Structures are rare and isolated.	Structures are rare and isolated.	Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive travel route observer. Structures may include power lines, microwave installations and so on.	Structures are rare and isolated.	Structures are readily apparent and may range from scattered to small dominant clusters including power lines, microwave installations, local ski areas, minor resorts and recreation sites.	Structures and structure complexes are dominant and may include major resorts and marinas, national and regional ski areas, towns, industrial sites, condominiums, or second home developments.
		P-7 *Visual Quality*	Preservation	Preservation	Visual quality objective is normally preservation.	Visually quality objective is normally retention. Preservation is compatible.	Visually quality objective is normally retention. Preservation is compatible.	Visually quality objective is normally partial retention. Retention and preservation are compatible.	Retention, partial retention and modification are the norm. Preservation is compatible.	Retention, partial retention and modification are the norm. Preservation is compatible.	Partial retention and modification are the norm. Preservation and retention are compatible.	N/A

SETTING INDICATORS ☺			OPPORTUNITY CLASSES									
			Primitive			Semi - Non - Primitive Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
PHYSICAL	Evidence Of Humans ↓	P-8 *Duration of Impact*	No evidence of campsites.	Evidence of campsites not visible to most users.	5 or fewer campsites per lake. No more than 2 campsites per 640 acres excluding lakeside camps.	5 or fewer campsites per lake, no more than 3 campsites per 640 acres excluding lakeside camps.	No more than 7 campsites per lake. No more than 3 campsites per 500 acres excluding lakeside camps.	5 or fewer campsites per lake, no more than 3 campsites per 640 acres excluding lakeside camps.	No more than 3 campsites per 640 acres.	No more than 3 campsites per 640 acres.	N/A	N/A
		P-9 *Degree of camp-site develop-ment*	No sites.	No sites.	Maximum site size 1,200 square feet. Max. barren core area 250 square feet. Two or less maximum size areas per lake.	Maximum site size 1,200 square feet. Max. barren core area 350 square feet. Two or less maximum size areas per lake.	Maximum site size 2,000 square feet. Max. barren core area 300 square feet. Three or less maximum size areas per lake.	Maximum site size 1,000 square feet. Max. barren core area 500 square feet.	Maximum site size N/A. Ma. barren core area 1,000 square feet.	Maximum site size 1000 square feet. Max. barren core area 250 square feet.	N/A	N/A
		P-10 *Dura-tion of Impact*	No loss of vegetation due to camping or travel.	No loss of vegetation due to camping—minor and temporary loss on some travel ways typically recovers on an annual basis.	Moderate loss of vegetation where camping occurs and along some travel routes. Impacts in some areas persist year to year.	Moderate loss of vegetation where camping occurs and along some travel routes. Impacts in some areas persist year to year.	Moderate loss of vegetation where camping occurs and along primary travel route. Impacts persist year to year.	Moderate loss of vegetation where camping occurs and along primary travel route. Impacts persist year to year.	Moderate loss of vegetation where camping occurs and along primary travel route. Impacts persist year to year.	Moderate loss of vegetation where camping occurs and along primary travel route. Impacts persist year to year.	N/A	N/A
		P-11 *Trash*	No trash.	Isolated and rare trash.	Infrequent trash.	Infrequent trash.	Infrequent trash.	Occasional trash along travelway and campsites.	Occasional trash along travelway and campsites.	Occasional trash along travelway and campsites.	N/A	N/A

SETTING INDICATORS ☺			OPPORTUNITY CLASSES									
			Primitive			Semi - Non - Primitive Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
PHYSICAL	Evidence of Humans	P-12 *Degree of Risk and Challenge*	Very high degree of risk and challenge.	Very high degree of risk and challenge.	Moderate degree of risk and challenge.	Relatively high degree of risk and challenge.	Moderate to low degree of risk and challenge.	Moderate to low degree of risk and challenge.	Moderate degree of risk and challenge.	Moderate degree of risk and challenge.	N/A	N/A
SOCIAL	Solitude	S-1 Encount-ers	No other parties.	No other parties.	Usually 2 parties or less per day encountered on trails; one party or less is a party of 6 or more.	On high use weekend days, generally 4 parties per day are encountered; 2 or less are parties of 6 or more. Contacts drop mid-week.	On high use weekend days, generally 6-12 parties per day are encountered; 3 or less are parties of 6 or more. Contacts drop mid-week.	On high use weekend days, generally 6 parties or less per day are encountered; 3 or less are parties of 6 or more. Contacts drop mid-week.	Generally 6-12 parties per day are encountered; 4 parties or less are groups of 6 or more. Contacts may increase on weekends.	Usually less than 2 parties per day are encountered on closed roads and trails. Generally there are no groups larger than 6 people.	N/A	N/A
	While Traveling	S-2 *RVD's per week*	Total use less than 3 people per five year period.	Total use less than 10 people per normal use season.	Total use 20 parties or less per week. May-July 30; Maximum RVD's 62 or less per week –3 weeks may exceed to a max. of 142 RVD's per week. Aug. 1 – Oct. 15; Max. RVD's 93 or less per week. 4 weeks may exceed to a maximum of 200 RVD's per week. Oct 16-May: Occasional use.	Total use 20 parties or less per week. May-July 30; Maximum RVD's 66 or less per week –2 weeks may exceed to a max. of 195 RVD's per week. Aug. 1 – Oct. 15; Max. RVD's 54 or less per week. 2 weeks may exceed to a maximum of 134 RVD's per week. Oct 16-May:	Total use 35 parties or less per week. May-July 30; Maximum RVD's 72 or less per week –3 weeks may exceed to a max. of 156 RVD's per week. Aug. 1 – Oct. 15; Max. RVD's 127 or less per week. 3 weeks may exceed to a maximum of 179 RVD's per week. Oct 16-May: Occasional use.	Trail use less than 30 parties per week May-Oct. 15; Trial use maximum RVD's 65 or less per week.	Trail use less than 20 parties per week. May-July 30: Max. RVD's 62 or less per week. 3 weeks may exceed to a maximum of 142 RVD's per week. Aug. 1- Oct. 15: Max. RVD's 93 or less per week. 4 weeks may exceed to a maximum of 200 RVD's per week. Oct. 15-May: Occasional use.	Total use 20 parties or less per week. May-Oct. 15: Trail use, max. RVD's 65 or less per week. See S-3 for road use. Oct. 15 – May. Occasional use.	N/A	N/A

SETTING INDICATORS ☺			OPPORTUNITY CLASSES									
			Primitive			Semi - Non - Primitive Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
SOCIAL	Solitude while Traveling	S-3 *Vehicle Disturb-ances*	No trailhead. No vehicular disturbances.	No trailhead. No vehicular disturbances.	No motorized trailhead. No vehicular disturbances.	No motorized trailhead. No vehicular disturbances.	10 passenger vehicles and 3 stock vehicles maximum parties at trailhead at one time. More than 20 vehicular disturbances per week on roads.	3 vehicles max parted at trailhead at one time. More than 20 vehicular disturbances per week on roads.	10 passenger vehicles and 3 stock vehicles maximum parties at trailhead at one time. More than 20 vehicular disturbances per week on roads. No vehicular disturbances on trails.	No motorized trailheads. No vehicular disturbances on roads or trails.	N/A	N/A
	Solitude while Camping	S-4 *Parties visible at Camp-sites*	Non-existent inter-party contacts.	Non-existent inter-party contacts.	One party or less visible at campsites.	Two parties or less are visible at campsites; 12 or less is a party of 6 or more.	On high use weekend days, parties or less are visible at campsites; 2 are parties of 6 or more. Numbers drop midweek.	Usually 3 parties or less are visible at campsites; 1 or less are parties of 6 or more.	Usually 3 parties or less are visible at campsites; 2 or less are parties of 6 or more.	User is generally camping alone.	N/A	N/A
		S-5 *# of Parties at one time*	No other parties camped within sight and sound.	No other parties camped within sight and sound.	No more than 3 parties camped at one time per lake basin. No more than 18 people at one time per lake basin. Standards are for lakes accessed by trail.	No more than 4 parties camped at one time per lake basin. No more than 20 people at one time per lake basin.	No more than 5 parties camped at one time per lake basin. No more than 30 people at one time per lake basin.	N/A	N/A	N/A	N/A	N/A

SETTING INDICATORS			OPPORTUNITY CLASSES									
			Primitive			Semi - Primitive Non - Motorized		Semi-Primitive Motorized	Roaded Natural		Rural	Urban
	Criteria	Factors	Class I	Class II	Class III	Unmodified	Portal		Roaded Natural	Roaded Modified/Non-motorized[1]		
MANAGERIAL	Regimentation	M1 *Presence of regulations and controls*	No on- site regulation	No on-site regulation	On-site regimentation is low with controls primarily off-site	On-site regimentation and controls present but subtle.	On-site regimentation and controls are noticeable, but harmonize with the natural environment.	On-site regimentation and controls present but subtle.	On-site regimentation and controls are noticeable, but harmonize with the natural environment.	On-site regimentation is low with controls primarily off-site.	Regimentation and controls obvious and numerous, largely in harmony with the manmade environment.	Regimentation and controls obvious and numerous.
		M-2 *Contact*	No contact with management personnel	No contact with management personnel	Infrequent contact with management personnel	Infrequent contact with management personnel	Infrequent contact with management personnel	Routine contact with management personnel.	Routine to frequent contact with management personnel.	Infrequent contact with management personnel	N/A	N/A

[1]Roaded Modified Non-motorized includes areas where public and administrative use of motorized vehicles is restricted due to wildlife security or areas where roads have been "put to bed".