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Forest Service

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Environmental Assessment

Tumbledown Hazardous Fuels Reduction Project

Sandpoint Ranger District, Idaho Panhandle National Forests
Bonner County, ID

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Cover picture: James Madison Alden, *Kellispelm Lake from Yellow Bluff Island, looking S.E. toward the S. extremity of the Lake.* 1860. (Today's Lake Pend Oreille and Warren Island). Reproduction courtesy of Bonner County Historical Society Museum, Sandpoint (Original painting in the National Archives).

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INTRODUCTION

The Tumbledown Hazardous Fuels Reduction Project is located in Bonner County, Idaho, approximately eighteen air miles southeast of Sandpoint, Idaho (Figure 1). The 5611 acre project area lies adjacent to the concentrations of private homes and property along Forest Road 278 in the North Gold, North Twin, South Twin, Tumbledown, Cedar, Canyon, and Brush Creek drainages; Township 53 North., Range 1 West, Sections 1, 2 and 3; Township 54 North, Range 1 West, Sections 10, 11, 14, 15, 22, 23, 25, 26, and 35 (Figure 2).

A Decision Memo authorizing the implementation of the Tumbledown Hazardous Fuels Reduction Project using a Categorical Exclusion for Hazardous Fuels reduction was signed on May 7, 2007. Recent litigation regarding the use of Categorical Exclusions for hazardous fuels reduction, has made it necessary to produce an Environmental Assessment (EA) for the project. In accordance with the National Environmental Policy Act (NEPA) and other relevant federal and State laws and regulations, this EA discloses the foreseeable environmental effects of the Tumbledown Hazardous Fuels Reduction Project for consideration in determining whether or not to prepare an Environmental Impact Statement. While the level of analysis and documentation associated with this project has increased, the proposed action has not changed. Modifications to the proposal resulting from previous public involvement and interdisciplinary team process remain incorporated.

Documents associated with this EA including the specialist reports and appendices are available from the IPNF website at **http://www.fs.fed.us/ipnf/eco/manage/nepa/index.html** or from the Sandpoint Ranger District at 1500 Hwy 2 Sandpoint, Idaho 83864.

PURPOSE AND NEED

In 2003, the Sandpoint Ranger District developed a list of potential hazardous fuels reduction projects. These potential projects were subsequently evaluated in terms of values at risk, complexity, and feasibility. This evaluation resulted in the Tumbledown Project area being identified in 2004 as a project priority under the Idaho Panhandle National Forests (IPNF) Fire Year Fuels Strategy (http://www.fs.fed.us/ipnf/eco/fire/ipnf_5yr_fuels_plan.pdf). At the request of the Bonner County Community Wildfire Protection group, a draft proposal was developed for inclusion in the Bonner County Community Wildfire Protection plan (Appendix G).

The purpose and need for the Tumbledown Hazardous Fuels Reduction Project was derived from field reviews and surveys of the resources in the area and responds to goals and objectives of the Idaho Panhandle National Forests (IPNF) Forest Plan (1987), National Fire Plan, Healthy Forests Initiative, Healthy Forests Restoration Act and the Bonner County Wildland Urban Interface Fire Mitigation Plan. The purpose and need are also responsive to recommendations made under the Interior Columbia Basin Ecosystem Management Project and the Pend Oreille Geographic Assessment.

Project Purpose: Reduce the risk to life and property from wildfire, increase firefighter and the public's safety, and reduce fire suppression costs through forest fuels modification. This will be achieved by:

- Reducing surface forest fuel loading and ladder fuels
- Reducing the number of trees with interlocking crowns that contribute to crown fire initiation and crown fire spread

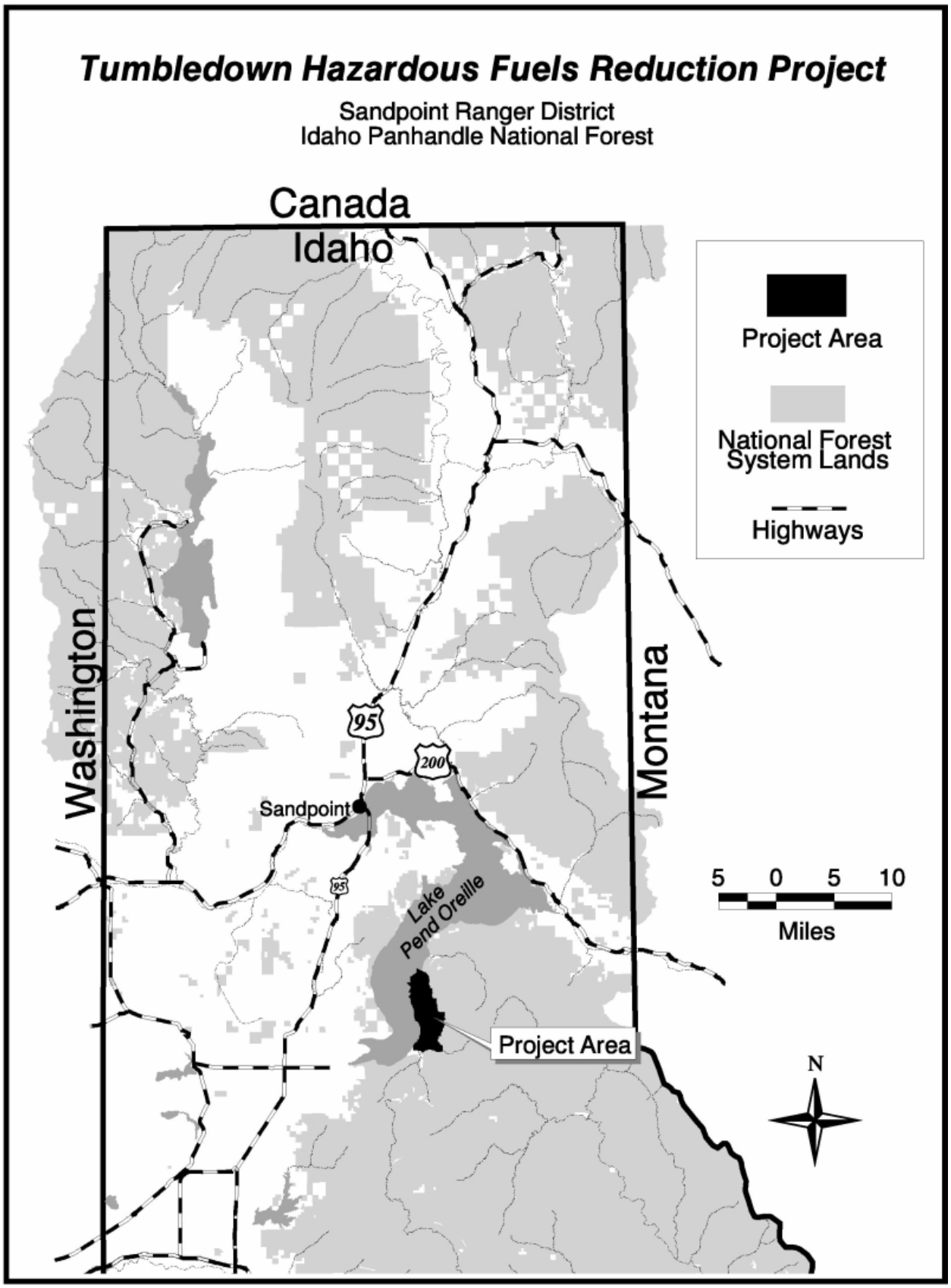

Figure 1. Vicinity map

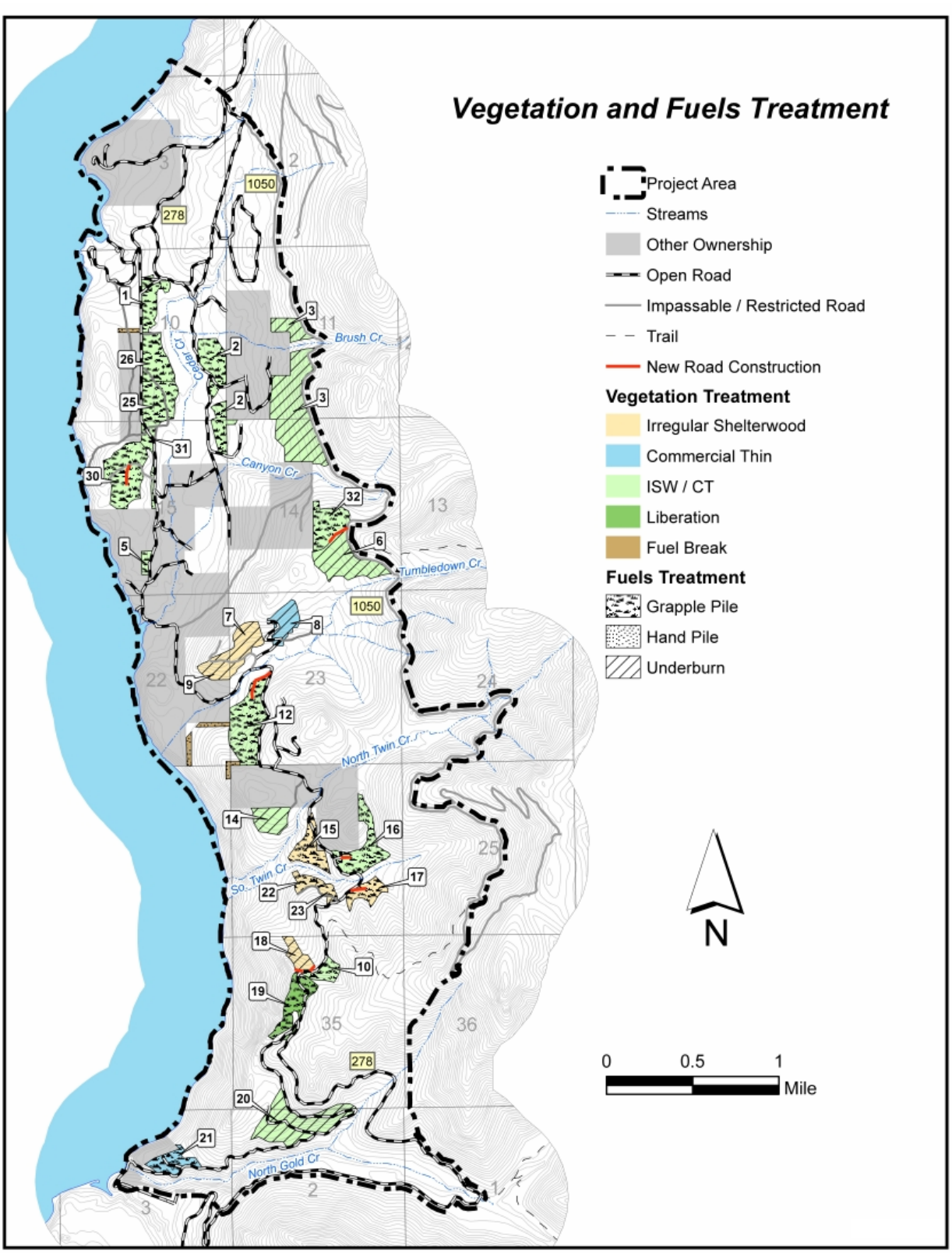

Figure 2. Vegetation treatment map (Alternative 2)

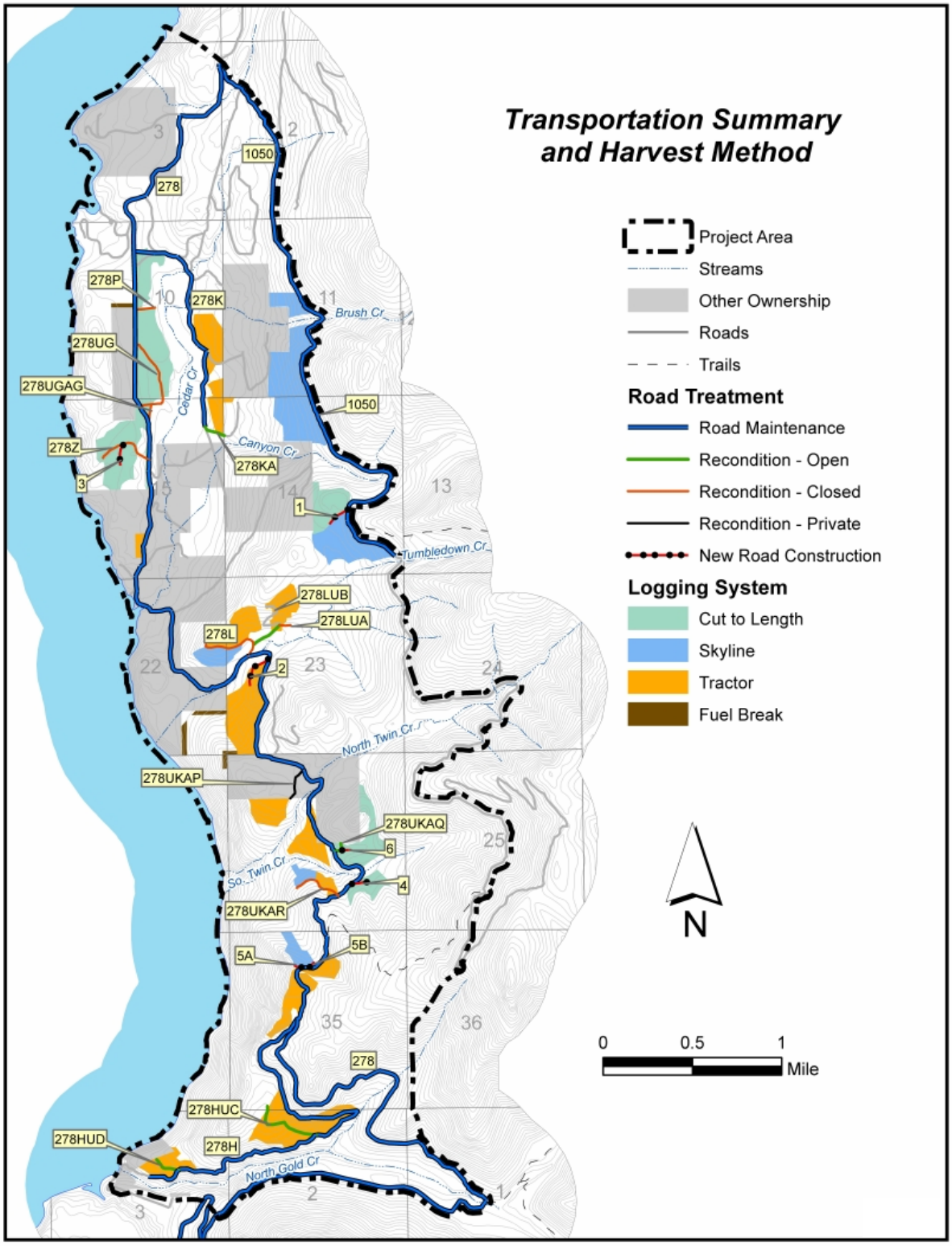

Figure 3. Proposed Fuel Treatment Map (Alternative 2)

Project Need: This project is being considered due to the hazardous fuel loadings that currently exist on National Forest System lands adjacent to private lands in the Wildland Urban Interface (WUI). A combination of ground fuels and dense forest canopy in the project area have created a high fire hazard. The project area is susceptible to stand replacing wildfire due to the available surface fuels and the dense, continuous fuel in the crowns of the trees. This places several of the values (private land, homes, power and phone lines, agriculture, domestic water sources, wildlife habitat, and visuals) in the area at risk. In addition to reducing the risk of severe wildfire, treating these fuels would also improve the emergency ingress/egress route in the event of a wildfire. The only available automobile ingress/egress route for residents in the project area is Forest Road 278. Portions of this travel route are through dense, overstocked stands of timber that have high fuel loadings. In the event of a fast moving wildfire, this potential evacuation route could easily become unusable due to intense heat, falling trees and/or obscured visibility due to smoke.

PROJECT CONTEXT AND BACKGROUND

The ID Team used information from a number of scientific assessments to develop the purpose and need for the project. Starting at the broad scale of the Columbia River Basin, the team derived general information about characteristics of the ecosystem. From there, the team "stepped down" their analysis to more specific levels of information - from the river basin level, to a subbasin level, to a landscape area level, to a watershed area level, and finally to a project area level. General information from these assessments and how they relate to the Tumbledown Hazardous Fuels Reduction Project area are briefly described below.

Aggressive fire suppression, past timber harvest and introduction of white pine blister rust have all affected vegetation patterns and hazardous fuel conditions within the Tumbledown project area. Over time, the forests in the project area have shifted from a predominantly ponderosa pine, western larch, and western white pine forest to a dense, fuel-laden forest dominated by shade-tolerant species such as Douglas-fir, grand fir and western red cedar. Without management or fire, stand densities have also increased. This has led to high competition levels for water, light, and nutrients, which in turn has caused increased mortality as well as increased susceptibility to damage from insects and diseases.
Species shifts, increasing density and associated mortality has caused an increase in the amount of both standing and surface fuels available to a large-scale wildfire.

National Forest System lands in the project area are mixed with private property (Figure 2). Development and human population on private lands are increasing. Homes, cabins, and the infrastructure supporting these properties need protection from wildfires. Given this situation, fire suppression will continue. However, current forest conditions have increased the risk of extreme fire behavior and have reduced the chance for successful fire suppression.

In order to maintain healthy, sustainable ecosystems and forest conditions that are less susceptible to severe fire, it is imperative to have species and forest structures that are adapted to disturbances such as insects and disease, fire and climatic variability. This is consistent with the findings of Quigley et. Al. (1997), the Pend Oreille Geographic Assessment and site-specific project area evaluations. Findings in these assessments recommend converting from species that are shade-tolerant but drought- and fire-susceptible to species that require more sunlight and are more adapted to drought and fire. Such a species shift would better represent the historic species mix. Active management can trend the ecosystem toward desirable conditions, and will not accelerate undesirable trends (Quigley and Arbelbide 1997, and USDA Forest Service, unpublished report).

Forest Plan Direction

The Forest Plan provides direction for all resource management programs and resource activities on the Idaho Panhandle National Forests. 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. The Forest Plan embodied the provisions of the National Forest Management Act (NFMA) of 1976 and its implementation regulations, as well as those of other guiding documents. Forest Plan goals (p. II-1 & II-2 of the Forest Plan) that guided the development of the purpose and need are:

- Provide efficient fire protection and fire use to help accomplish land management objectives.
- Manage the forest resources to protect against insect and disease damage.
- Provide for a diversity of plant and animal communities.
- Maintain high quality water to protect fisheries habitat, water based recreation, public water supplies, and be within state water quality standards.
- Manage resource development to protect the integrity of the stream channel system.

Many Forest Plan standards are applicable to the general design of the proposed action. Specific Forest Plan standards (pp. II-32-34, II-38-39) that guided the development of the purpose and need are:

- Human life and property will be protected from fire.
- 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.
- Project design will provide for site preparation and slash hazard reduction practices that meet reforestation needs of the area.
- Encourage utilization of Forest products to reduce biomass, which must be disposed of otherwise.
- 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.
- Maintain concentrations of total sediment or chemical constituents within State standards.

The IPNF Forest Plan designated Management Areas (MAs) to guide the management of National Forest lands within the Idaho Panhandle National Forests. Each MA provides for a combination of activities, practices, and uses appropriate to the management goals and objectives of that specific management area. The Tumbledown Hazardous Fuels Reduction Project area (5611 acres) is comprised of lands in three MAs. Management areas are described in detail in the IPNF Forest Plan on pages III-1 through III-87; summaries of the management area goals specific to the project area are as follows:

Management Area 4 (3730 acres): "Management Area 4 consists of lands designated for timber production within big game winter range" (p. III-17). The lands are predominantly on southerly exposures below 4,000 feet in elevation. Achieving the MA 4 goal requires providing sufficient forage to support big game habitat needs through scheduled timber harvest and permanent forage areas. This also includes the same goals, as MA 1 listed above except, that dispersed recreation opportunities would be provided when consistent with wildlife habitat needs.

Management Area 9 (1545 acres): "Management Area 9 consists of 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 nonpublic ownership" (p. III-39). Steep slopes, thin soils and surface rock or rock outcrops often on higher ridges above 5,000 feet in elevation characterize these lands. Management goals are to maintain and protect existing improvements and resource productive potential and meet visual quality objectives.

Management Area 1 (214 acres): "Management Area 1 consists of lands designated for timber production…" (p. III-2). Management goals are to manage suitable timber production lands for long-term growth and production of commercially valuable wood products.

Inland Native Fish Strategy (INFS) Riparian Habitat Conservation Areas (RHCA) – The standards and guidelines under INFS provide the management direction for RHCAs. In 1995, this direction replaced previous Forest Plan direction for managing riparian areas using standards and guidelines described for Management Area 16.

Applicable Laws

Shown below is a partial list of federal laws and executive orders pertaining to project-specific planning and environmental analysis on federal lands. 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 the project file.

Federal Laws

- The National Environmental Policy Act of 1969 (as amended)
- The Clean Water Act of 1977 (as amended)
- The Clean Air Act of 1970 (as amended)
- The National Forests Management Act (NFMA) of 1976 (as amended)
- The Forest and Rangeland Renewable Resource Act (RPA) of 1974 (as amended)
- The Archaeological Resources Protection Act (1979)
- The National Historic Preservation Act (1966)
- Idaho Forest Practices Act (1974) and amendments
- Endangered Species Act (ESA) of 1973 (as amended)
- American Indian Religious Freedom Act of 1980

Executive Orders

- Executive Order 11593 (protection and enhancement of the cultural environment)
- Executive Order 11988 (floodplains)
- Executive Order 11990 (wetlands)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (aquatic systems and recreational fisheries)
- Executive Order 13186 (Migratory Bird Treaty Act)

Final Rule – Administration of the Forest Development Transportation System

In January 2001, the Forest Service Manual (FSM), which governs regulations concerning the management, use and maintenance of the National Forest Transportation (Road) System, (Chapter 7700) was revised with a "Final Rule." The Final Rule set forth that if a Forest level roads analysis has not been completed, the Responsible Official determines whether a roads analysis is needed at the project scale, and if so, what level of analysis is necessary to support a project-level decision. The North Zone of the Idaho Panhandle National Forests has not completed a forest-level roads analysis. In May of 2004, the Sandpoint District Ranger established direction for a roads analysis for the Tumbledown Hazardous Fuels Reduction Project (Project File).

Scope of the Analysis

The Tumbledown Fuels Reduction Project EA is a project-level analysis. The scope of the analysis is confined to addressing the potential environmental consequences and issues related to project implementation. It does not attempt to address decisions made at higher levels, but rather to implement direction provided at those higher levels. The Tumbledown Fuels Reduction Project EA tiers to the IPNF Forest Plan EIS as directed by 40 CFR1502.20.

In accordance with NEPA, it is the responsibility of the agency to assess direct and indirect environmental effects resulting from an agency action as well as the cumulative effects of all past, present and reasonably foreseeable actions. Each resource area analyzes only those actions that fall within the cumulative effects analysis area described for that resource and that have the potential to affect the resource. This environmental assessment does not include the potential future activities that would be necessary to maintain desired stand conditions. Because of the uncertainty of the timing and conditions of these future actions, it was decided that any future actions designed to create or maintain the desired stand conditions defined in this document would be analyzed separately, following applicable legal requirements.

DECISION TO BE MADE

This EA is not a decision document. The EA discloses the environmental consequences of proceeding with the proposed action or any alternatives, and aids the deciding officer in determining whether the effects disclosed would have a significant effect on the environment. If the deciding officer determines there would be no significant effects, an alternative will be selected and a Finding of No Significant Impact and a Decision Notice will be issued. The final decision will be based on the information in this document, on public comments, financial considerations, and on how well the chosen alternative meets the purpose and need of the project and complies with applicable state and federal laws, agency policy, and Forest Plan direction.

The deciding officer will determine whether the Forest Service should manage vegetation on National Forest System land to protect adjacent communities, subdivisions, private property, and natural resources from the risks associated with wildland fire. If so the following elements would be decided:

- Where and to what extent should fuel reduction activities occur in the project area?
- How will the transportation system be managed?
- What design features and mitigations should be used to meet laws and Forest Plan direction?
- How should such features be applied?
- What monitoring is needed to assure that desired results are achieved?

PUBLIC INVOLVEMENT

In July of 2005, a proposal for the Tumbledown Hazardous Fuel Reduction Project was mailed out to 242 individuals, organizations, agencies, tribes, and local media on the Sandpoint Ranger District mailing list to gather comments to be used in developing the proposed action. The project was also placed on the Idaho Panhandle National Forests Quarterly Schedule of Proposed Activities that month. In response to this scoping effort, comments were received from 21 people, organizations, and agencies. These comments are included in the project file and are available for public inspection upon request.

In August of 2006, we sent out an update letter on the project to 238 individuals, organizations, agencies, tribes, and local media on the Sandpoint District mailing list. The proposed action was refined between these two mailing. The changes were a result of ground verification of vegetative conditions, making some areas higher priority and others lower priority for treatment, as well as comments received during scoping. A more detailed account of the modifications made can be found in the project file along with issue disposition of the 2005 and 2006 comments.

In addition to refining the proposed action due to public comment and further ground reconnaissance, the second mailing was required due to a court decision, Earth Island Institute v. Ruthenbeck, in which the Federal District Court for the Eastern District of California struck down the Forest Service provision at 36 CFR 215.4(a). That provision had excluded projects such as this one from public notice, comment, and appeal. The comment period was intended to provide those interested in or affected by the proposal an opportunity to make their concerns known prior the my decision. We received 17 responses.

A decision was made to implement the Tumbledown Hazardous Fuels Reduction Project using Categorical Exclusion #10 on May 7, 2007. This decision authorized fuel reduction treatments on approximately 700 acres of National Forest System lands. A copy of the decision was mailed to the 36 scoping respondents who had expressed interest as well as to local media outlets.

In December of 2007, the United States Court of Appeals for the Ninth circuit issued a ruling preventing the Forest Service from approving or implementing Hazardous Fuels Reduction projects using Categorical Exclusion #10 authority. In response to this ruling, we have prepared an Environmental Assessment to determine whether or not the activities proposed in Tumbledown Hazardous Fuels Reduction Project would result in significant effects and thus warrant preparation of an Environmental Impact Statement.

ISSUES

An issue is a concern or dispute about the environmental effects of a proposed activity. Issues are used in the environmental analysis for formulating alternatives, developing mitigation and tracking effects. Some sources of issues are:

- Raised by the public during scoping
- Comments from other government agencies
- Identified for similar projects (past actions)
- Generated from compliance with law or regulations
- Management/Interdisciplinary Team (internal) concerns

Issues associated with the Tumbledown Hazardous Fuels Reduction Project are described below.

Effects on Fire Behavior
Concerns related to fuel characteristics, fire behavior and associated resource impacts in the project area were used to develop the proposed action alternative. These concerns were repeated throughout the interdisciplinary team and public involvement processes.

Effectiveness of Fuels Treatments
Some respondents expressed concern over the effectiveness of fuel treatment with this project. The effectiveness of fuel treatments was estimated using predicted fireline intensity and resistance to control

Effects on Big Game Security
Many respondents expressed concern over big game security in the project area. Of primary concern was the impact on the Idaho Fish and Game (IFG) area restriction in Game Management Unit 4A, and the impact of the project on road hunting. Project-related activities would not interfere with or alter quality hunt restrictions in the project area (Appendix A and Wildlife Report). The proposed treatments would retain hiding cover where the combination of ground fuel and dense forest canopies has not created a high fire hazard.

Effects of Road Construction
Road construction has the potential to affect soil productivity, water quality, fish and wildlife habitat, and vegetative communities. Design features and mitigation measures have been identified to reduce the risk of adversely affecting soil, fish, wildlife, and vegetative resources from road construction. The effects of road construction are analyzed in these resource sections.

Effects on Water Quality
Timber harvesting, fuel treatments, road building and decommissioning as well as road maintenance all have the potential to deliver sediment to live streams and increase water yield, which can affect water quality both within the project area and downstream. Existing springs and domestic water sources can also be affected.

Effects on Fish Habitat
Water quality and changes in channel characteristics can affect fish populations and/or habitat within the project area or downstream.

Effects on Soil Productivity
Soil productivity can be reduced by removal of organics and associated nutrients or by detrimental impacts such as compaction, displacement, rutting, surface erosion, puddling, or severe burning. Road building can impact soil productivity.

Effects on Vegetation Communities
Changes in forest composition, structure, and pattern can affect forest health, fire behavior and other resource elements, such as fish and wildlife habitat.

Effects on Old Growth
A comment was received expressing concern about the project's potential effects on old growth, particularly the ancient cedar grove in the North Gold Creek drainage. No old growth stands would be treated with any alternative. Additionally, small pockets of large, old trees, which do not meet the minimum criteria for old growth allocation, would be retained. Further details regarding he effects of project activities on old growth can be found in the vegetation specialist report and in Appendix F.

Effects on Visual Quality
Proposed activities could adversely affect the visual quality of the area.

Effects on Air Quality
Smoke from underburning and pile burning, and dust generated from logging operations and truck traffic have the potential to affect local and regional air quality.

Effects of Project Activities on Sensitive and Rare Plants
Relative amount of canopy opening and/or ground disturbance can affect rare plant populations or suitable habitat.

Effects of Project Activities on Noxious Weed Introduction and Spread
Proposed activities including canopy removal and ground disturbance could increase the risk of noxious weed introduction and spread.

Issues Eliminated from Detailed Analysis

Issues that were 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence were eliminated from detailed analysis. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of these issues and reasons for their elimination from detailed analysis are summarized below.

Effects on Unregulated Off-Highway Vehicle (OHV) Use

Many respondents expressed concern regarding OHV use in the project area. The travel plan for the project area is displayed on the Idaho Panhandle National Forest, Kaniksu National Forest Travel Plan map (2003). Authorized motorized travel routes are identified on this map. Approximately 1.87 miles of road that is currently impassible and needed for this project would be opened during project activities, secured with gates during project activities, and returned to pre-project status after project activities are completed. The proposal would also require the construction of approximately 0.71 mile of new temporary roads. Temporary roads would be located in a manner to prohibit unauthorized use during the project, closed with gates, and would be decommissioned after project-related activities are completed. When the purchaser is working on a gated road, the gate would be closed at the end of each day in order to avoid establishing use on these roads. Temporary roads and reconditioned non-system roads would be decommissioned at the completion of project activities. Decommissioning would include culvert removal, decompaction and/or re-contouring of the road prism, seeding, and the incorporation of woody debris and organic matter into the disturbed area. These activities would make the routes impassable to motorized travel and preclude OHV use.

Effects on Access
Several comments were received regarding road management and the potential for increased motorized access in the Tumbledown Project area. This issue was considered but not analyzed in detail because changing current access restrictions would neither address the purpose and need nor facilitate the implementation of the proposed action. Therefore, changing access was considered outside the scope of the proposed action.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

For this project, the Forest Service considered several alternatives: no action, the proposed action, the original proposed action, a rehabilitation and recovery alternative, an alternative closing all non-essential roads, and an alternative emphasizing prescribed burning. The original proposed action, a rehabilitation and recovery alternative, an alternative closing all non-essential roads, and an alternative emphasizing prescribed burning were considered but eliminated from detailed study as described below.

Alternatives Considered But Eliminated From Detailed Analysis

Federal agencies are required by NEPA to rigorously explore and objectively evaluate a range of reasonable alternatives, and to briefly discuss the reasons for eliminating any alternatives that were not considered in detail (40 CFR 1502.14). Several alternatives suggested by members of the public during previous scoping efforts for the project are discussed below.

Original Proposed Action

The current proposed action has evolved over several years. The initial proposal for the Tumbledown project looked at all "high-risk stands" (stands with high fuel loading that were not trending toward desired species compositions and structures, or stands at high risk of mortality). Prior to its initial release to the public in 2005, the proposed action had been modified through an interdisciplinary process as ground truthing occurred and resource concerns were addressed. Various treatment areas were dropped because of difficult access, the need to maintain corridors and secure areas for wildlife, high social value, and the potential for effects on aquatic and wildlife resources. Other areas were added or dropped or their prescriptions changed as ground verification revealed new information making them higher or lower priority than we originally thought.

Additional temporary road construction also a component of the original proposed action. The majority of these temporary road segments were eliminated as treatment areas were dropped due to resource concerns, or when proposed locations were determined to be too risky or unfeasible. The original treatment proposal was also modified in response to public scoping comments and meetings with local landowners and community members.

Given the evolution of the project and proposed activities that has occurred, it would no longer be prudent to analyze the original proposed action in detail. This alternative was thus dropped from further consideration.

An Alternative Only Involving Rehabilitation and Recovery

We were encouraged by a scoping respondent to examine the long-term benefits of not spending money for road maintenance or other management activities and administration in the project areas.

Given the intermix of private and National Forest System Lands in the project area, continued fire suppression is inevitable. Current stand conditions and fuel loading have increased the chance of a stand-replacing wildfire that would be resistant to suppression. It follows that hazardous fuels reduction in the area is a priority.

Proposed improvements to the transportation system are being proposed to facilitate the reduction of hazardous fuels. The road management proposed in the project was informed by a project area level roads analysis process (RAPS). The RAPS examined the existing transportation system with the intent of

identifying road-associated resource risks and opportunities and to determine if existing roads were needed.

Currently closed roads that would be opened to facilitate fuel treatments would be returned to pre-project status (closed) via decommissioning at the completion of the project. Temporary roads would also be decommissioned at project completion. Road maintenance would benefit both local residents and visitors to the forest while reducing, or eliminating current risk to aquatic resources.

Rehabilitation and recovery alone wouldn't achieve the project's goal of reducing fire hazard. The high priority of the project area for hazardous fuel treatments, and the necessity of utilizing a transportation system to carry out these activities led us to drop this alternative from further consideration.

An Alternative Emphasizing Prescribed Burning

We were encouraged by several scoping respondents to consider an alternative that emphasized the use of prescribed burns as the primary treatment to reduce fuels and shift species composition. We were also encouraged to consider applying prescribed burns in un-logged units.

The use (and potential benefits) of prescribed fire was considered throughout the diagnosis and planning process used to develop the proposed action. This resulted in prescribed fire being proposed on about half of the total acres proposed for treatment.

In treatment areas not proposed for broadcast burning, an excavator would generally be used to pile woody debris in areas where slopes permit. These piles would then be burned in late fall during periods of low fire danger. This was done to minimize the risks associated with prescribed fire use given the proximity of these areas to private land.

Using prescribed burning alone to reduce hazardous fuels in unlogged areas would not be effective at achieving the objectives of the purpose and need. Safe and controllable prescribed fires are planned in spring and fall when weather and moisture conditions help fire managers keep fire intensities and severities low. In stands where treatments are proposed, shady conditions would make burning in spring or fall conditions difficult. In order to get a fire to burn in these shady, dense stands, ignition would have to take place in hot, dry and/or windy conditions. This would increase the chance of a lethal crown fire occurring which would be hard control, and would likely produce undesirable effects. (see fire effects discussion "How Easily An Unwanted Fire Could Be Suppressed").

Because the use of prescribed fire was considered and integrated throughout the planning process (which resulted in a large part of the fuel treatments proposed in Alternative 2 involving prescribed fire), and because the use of prescribed fire alone in the stands proposed for treatment would entail high risk, an alternative emphasizing fire use was dropped from further consideration.

An Alternative Permanently Closing all Non-Essential Roads

One scoping respondent strongly encouraged the Forest Service to decommission or relocate as many roads as possible within the project area. The road management proposed in the project was informed by a project area level roads analysis process (RAPS). This process examined the existing transportation system with the intent of identifying road-associated resource risks and opportunities, and to determine if existing roads were needed following project completion. Recommendations from the RAPS process were subsequently incorporated into the proposed transportation system management. An alternative permanently closing all non-essential roads was dropped from further consideration because the scoping respondents' premise that permanently closing all non-essential roads would save money, protect water

quality, protect wildlife, and safeguard threatened, endangered and sensitive species, and their habitat was a strong consideration in the formulation of the proposed action.

Alternatives Considered in Detail

Alternative 1: No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No hazardous fuel treatments or timber harvest would be authorized. Existing road maintenance, weed treatments, and recreation activities would continue.

Alternative 2: Proposed Action

Alternative 2 proposes vegetation treatments and associated road maintenance and temporary road construction developed to respond to the purpose and need for the project (Figures 2 and 3). Vegetation treatments would entail the removal/harvest of small-diameter trees and brush to decrease fuel loadings and disrupt fuel continuity over approximately 671 acres (Figures 2 and 3). These treatments were designed to reduce the risk of wildfire spreading to adjacent land, and increasing the chance of successful suppression efforts. A combination of mechanical methods would be used to remove saplings, brush, and primarily small-diameter (i.e., 4 to 14 inches in diameter) mixed conifer species in areas of tree mortality attributed to insect attack, competition, and/or root disease. Small pole and immature size-class stands occupy the majority of the project area. This is the result of stand-replacing fire, salvage logging in the late nineteenth and early twentieth century, and subsequent fire suppression activities. Within these stands, some of the individual trees have grown to a diameter at breast height (DBH) approximating 14 inches, but the majority of the trees in the areas proposed for treatment are in the 9 to 10-inch size range. In the project area, trees that are contributing to conditions unfavorable to a long-term reduction of ladder fuels and live and dead fuel loadings would be removed. Trees in the treatment areas displaying vigorous growth, resistance to insects and disease, and trending toward mature structure would be retained. Priority would be given to retaining cedar-dominated riparian areas and large, healthy larch, ponderosa pine, and white pine. Openings created by fuels reduction treatments would be planted with white pine, western larch, and ponderosa pine.

Prescribed fire would be used to reduce hazardous fuels and recycle forest nutrients. In areas where slopes permit, an excavator would be used to pile woody debris. These piles would then be burned in late fall during periods of low fire danger. These treatments would result in long-term reduction of ladder fuels as well as reduction in live and dead fuel loadings. A detailed unit summary of the types of treatments that will be implemented with this decision follows:

Treatment Details (Refer to Figures 2 and 3 and to Table 1)

Units 1-6, 10-14, 16, 20, 25-32 (505 acres) – Irregular Shelterwood and Commercial Thinning

Irregular shelterwood is a silvicultural term that describes a variable spatial arrangement of dominant and codominant trees of desired species (such as western white pine, ponderosa pine, and western larch) to provide seed and shade. This method would be applied where there is a lack of desirable trees to allow for a commercial thinning. Areas with a greater density of desired trees would receive a commercial thinning. Harvest would focus on leaving good form, full crowned, healthy trees (in the upper crown classes) in the following order of preference: western white pine, western larch, ponderosa pine and western redcedar, as well as some healthy Douglas-fir. In some areas (Figure 3) fuels would be machine grapple piled and the piles burned. Underburning would generally take place on slopes steeper than 35 percent. Some tree planting would follow timber harvest in order to establish desirable and/or fire-resistant species such as ponderosa pine, white pine and western larch.

Units 8, and 21 (35 acres) - Commercial Thin

The focus in these units is on "low thinning" to remove trees in the lower crown classes that provide ladder fuels to the larger surrounding trees. The larger trees with higher crowns would be favored to leave. Some spot-grapple piling would be needed in small areas with concentrations of activity fuels. No planting would be needed.

Units 7, 9, 15, 17, 18, 22, 23 (95 acres) - Irregular Shelterwood

Some grapple piling for fuels reduction would occur on slopes up to 35 percent and underburning would be done on steeper slopes. Tree planting of western white pine, larch, and ponderosa pine would follow to establish these early-seral, fire-resistant species.

Units 19 (25 acres) – Liberation Cut

This is a release harvest in a stand not past the sapling stage to free the favored trees from competition with older overtopping trees. This unit has thousands of sapling-sized western hemlock, larch, western redcedar, lodgepole pine, and Douglas-fir per acre in need of precommercial thinning and release from poor formed, overstory trees. The prescription would decrease fuel loadings and disrupt fuel continuity, increasing the chance of successful suppression efforts. No planting would be needed.

Units 99 (11acres) – Fuelbreak

The fuelbreak would consist of felling hardwoods and brush species, precommercial thinning of conifers, and hand piling and burning of piles in an approximately two-chain (132-foot) strip along strategic areas (primarily adjacent to private land).

Fuel Treatment (Figure 2) - Fuels would be treated in order to help improve the ability to suppress wildfires, restore fire as an ecological process, and to prepare the site for planting desired longer-lived species of ponderosa pine, larch, and white pine. To reduce existing fuels and those created by the vegetation treatment, there would be about 366 acres of grapple piling and about 294 acres of underburning. About 11 acres in the project are not conducive to broadcast burning or mechanized activity. In an effort to reduce hazardous fuel loadings and construct fuel breaks, hand crews would be used in these areas.

Logging Systems (Figure 3)- Vegetative harvest systems would include harvester/forwarder on about 208 acres, skyline yarding on about 165 acres, and tractor yarding on about 287 acres.

Table 1. Treatment Summary

Unit	Proposed Treatment Acres	Harvest System (Acres)*			Underburn Acres	Grapple/Hand Pile Acres	Reforestation Acres
		CTL	T	S			
1	22	22				22	16
2	39		39			39	33
3	93			93	93		40
5	5		5			5	
6	40			40	40		27
7	22		22		22		22
8	18		18		18		
9	14			14	14		14
10	11		11			11	9
12	49		49			49	40
14	18		18		18		8
15	21		21			21	21
16	33	33				33	23
17	14	14				14	14
18	11			11	11		11
19	25		25			25	
20	56		56		56		28
21	17		17			17	
22	7			7		7	7
23	6		6			6	6
25	33	33				33	22
26	28	28				28	17
30	44	44			10	34	34
31	9	9				9	6
32	25	25			12	13	13
Fuelbreak	11					11	
Total	**671**	**208**	**287**	**165**	**294**	**377**	**411**

* Cut to Length (CTL), Tractor (T), Skyline (S)

(All acres shown above are approximations based on aerial photography interpretation, field visits and GIS/GPS data)

Road Maintenance and Construction

A complete roads analysis plan for this project area was prepared through an interdisciplinary team process. No new permanent roads would be constructed. Treatment areas would be accessed using existing classified roads, existing unclassified roads, and new temporary roads. Approximately 1.87 miles of road that is currently impassible and needed for this project would be opened during project activities, and closed after treatment activities are completed. Alternative 2 would construct approximately 0.71 miles of new temporary roads. Temporary road construction is necessary to access National Forest System (NFS) land adjacent to private property and NFS Road #278 in the project area. Each new temporary road constructed would not exceed one half mile in length, and the combined distance of all new temporary road constructed in the project would not exceed one mile.

ROAD DEFINITIONS
(From FSM 7705)

Temporary Road – Road constructed but not necessary for long-term resource management.

Decommissioning – Activities that result in the stabilization and restoration of unneeded roads to a more natural state. Includes removal of all stream crossings and full recontour of the entire road prism, introduction of woody debris, and revegetation as needed.

Storage – A method of retaining a permanent road for future use but removing features to eliminate hydrologic risks. Includes, recontour of unstable fill slopes, cutslope stabilization, ripping the road tread, installation of no-maintenance cross ditches, and revegetation. Also includes some kind of road closure method such as with a guard rail barrier, gate, an earthen berm, or a short section of full recontour.

Road Maintenance – The upkeep of a road necessary to retain or restore the road to the approved road management objective.

Reconditioning -- Maintenance activities performed prior to use, such as; removal of barricades, clearing trees and brush, general road blading, and construction of drain dips.

Classified Road – Road determined to be needed for long-term motor vehicle access.

Unclassified Road – Roads on National Forest lands that are not managed in the forest transportation system. Examples include abandoned roads, unplanned roads, and roads constructed previously but not included in the system for maintenance or regular upkeep.

Traffic on newly constructed temporary roads and on roads opened for the project would be limited to project related activities. Newly constructed temporary roads and roads opened for the project would be gated during the project and decommissioned or placed back in storage after project activities are completed.

Table 2. Status of roads in the project area before and after treatment (Alternative 2)

ROAD NUMBER	TREATMENT	Miles	Current Status	Status After Project
FSR 1050	Road Maintenance	3.70	Classified/Open	Classified/Open
FSR 278	Road Maintenance	12.80	Classified/Open	Classified/Open
FSR 278H	Road Maintenance	2.60	Classified/Open	Classified/Open
FSR 278HUC	Recondition	0.50	Classified/Open	Classified/Open
FSR 278HUD	Recondition	0.15	Classified/Open	Classified/Open
FSR 278K	Road Maintenance	1.50	Classified/Open	Classified/Open
FSR 278KA	Recondition	0.20	Classified/Open	Classified/Open
FSR 278L	Recondition	0.38	Classified/Storage	Classified/Storage
FSR 278LUA	Recondition	0.10	Classified/Impassible	Classified/Decommission
FSR 278LUB	Recondition	0.20	Classified/Open	Classified/Open
FSR 278P	Recondition	0.11	Classified/Impassible	Classified/Decommission
FSR 278UG	Recondition	0.51	Unclassified/ Impassible	Unclassified/Decommission
FSR 278UGAG	Recondition	0.11	Unclassified/ Impassible	Unclassified/Decommission
FSR 278UKAP	Recondition	0.20	Private Road	Private Road
FSR 278UKAQ	Recondition	0.10	Unclassified/Open	Unclassified/Open
FSR 278UKAR	Recondition	0.32	Unclassified /Impassible	Unclassified/Decommission
FSR 278Z	Recondition	0.34	Classified/Storage	Classified/Storage
Temporary Road 1	New Construction	0.14	N/A	Decommission
Temporary Road 2	New Construction	0.21	N/A	Decommission
Temporary Road 3	New Construction	0.12	N/A	Decommission
Temporary Road 4	New Construction	0.09	N/A	Decommission
Temporary Road 5a	New Construction	0.05	N/A	Decommission
Temporary Road 5b	New Construction	0.04	N/A	Decommission
Temporary Road 6	New Construction	0.06	N/A	Decommission

In addition to the aforementioned activities, the interdisciplinary team has identified and included in the decision the following road improvements for stream quality and/or fish habitat:

- Remove an undersized culvert where Forest Road 278 crosses Tumbledown Creek and install a larger culvert to reduce stream sedimentation and restore fish passage. (Appendix A)
- Apply crushed rock and improve surface and ditch drainage where Forest Road 278 crosses Tumbledown Creek, Gold Creek, Branch North Gold Creek, Kickbush Gulch, Granite Creek, and Tom's Gulch to reduce sedimentation. (Appendix A)

Table 3. Transportation Activity Summary (Alternative 2)

Action	Miles
Road Maintenance	20.60
Reconditioning of Open Roads	1.35
Reconditioning of Closed Roads	1.87
Temp Road Construction	0.71
Grand Total	**24.53**

Design Features, Mitigation and Monitoring

Mitigation and design features were identified to minimize or eliminate adverse environmental impacts that may occur with implementation of the proposed action (Alternative 2). Some of the more important design features and mitigation from these appendices are highlighted in the following environmental consequences discussion Monitoring is designed to gather the data necessary for project evaluation. Please refer to Appendices A, B, C and D of this EA for the complete suite of site-specific design features, mitigation and monitoring developed for this project.

ENVIRONMENTAL CONSEQUENCES

This section provides a summary of the environmental impacts of the alternatives. Appendix E contains expanded discussion of cumulative effects including a table of past, ongoing, and foreseeable activities and events. The specialist reports from which the environmental consequences section was derived are available in the project file. Theses reports detail the analysis methodology; pre-field and field survey results; required mitigation and monitoring; the direct, indirect and cumulative effects of implementing the alternatives, consistency with regulatory direction and the scientific literature utilized. All of this information will be used to determine whether or not to prepare an environmental impact statement or a finding of no significant impact. The project area does not contain any parklands, prime farmlands, wild and scenic rivers or ecologically critical areas

Documents associated with this EA including the specialist reports and appendices are available from the IPNF website at **http://www.fs.fed.us/ipnf/eco/manage/nepa/index.html**, from the Sandpoint Ranger District 1500 Hwy 2 Sandpoint, Idaho 83864 or by calling (208) 263-5111.

Wildlife

The wildlife report located in the project file discusses and analyzes in detail the effects of the proposed activities on wildlife species and habitat. The report discusses regulatory framework; analysis methodology; existing condition; prefield and field survey results; required mitigation and monitoring; the direct, indirect and cumulative effects of implementing the proposed action and no action; and consistency with regulatory direction.

The Wildlife Report identifies which species occur in the area and analyzes whether or not they would be affected by the project. As a result of the analysis contained in the Wildlife Report, only minor effects are expected to designated sensitive or management indicator species (MIS) in the area and there would be no effect to any threatened or endangered species. See Table 6 for a summary of the effects determinations.

Affected Environment

Species Not Analyzed in Detail

A preliminary analysis was conducted for each potentially affected wildlife species and their habitat to determine the scope of analysis. The species listed in Table 4 would not likely be affected by the proposed activities because:

- they do not have suitable habitat,
- they are not expected to be in or near the project area,
- they would not be impacted, or
- impacts would be avoided or inconsequential given the project design.

For these reasons, these species were not analyzed in detail. See the wildlife project file and the wildlife biological assessment for additional rationale.

Table 4. Wildlife species not analyzed in detail.

Species	Rationale for Elimination from Detailed Analysis	Preferred Habitat
Threatened and Endangered Species		
Woodland Caribou (*Rangifer tarandus caribou*)	No suitable habitat is present within the project area. The project area is outside recognized caribou habitat.	Above 4,000 ft. in Englemann spruce/subalpine fir and western red cedar/western hemlock forests.
Canada Lynx (*Lynx Canadensis*)	The project area is not within a designated Lynx Analysis Unit (LAU) and does not provide a corridor for linking lynx habitat.	Higher elevation lodgepole pine and spruce/ fir forests with adequate prey base of snowshoe hares, its primary food.
Grizzly Bear (*Ursus arctos horribilis*)	The project area is not within a designated Bear Management Unit (BMU) or an area supporting grizzly bears outside of the recovery area.	Habitat generalist with seasonal preferences. Denning areas isolated and remote from human development.
Gray Wolf (*Canis lupus*)	No wolf packs or wolf activity documented within or near the project area.	Wide variety of habitats generally remote and isolated from human development. Adequate populations of prey species, including wintering concentrations of deer or elk.
Sensitive Species		
Bald Eagle (*Haliaeetus leucocephalus*)	Active nest and suitable nest/roost trees within the project area would not be impacted by project activities due to project design	Normally nest and forage near large bodies of water. Winter visitors or yearlong residents of northern Idaho.
Black Swift (*Cypseloides niger*)	No suitable habitat is present within the project area.	Builds nest behind or next to waterfalls and wet cliffs.
Harlequin Duck (*Histrionicus histrionicus*)	Suitable habitat within the project area would not be impacted by project activities due to project design.	Shallow, swift streams in forested areas.
Peregrine Falcon (*Falco peregrinus anatum*)	No suitable habitat is present within the project area.	Open habitats near cliffs and mountains. Nest in cliffs near an adequate prey base.
Common Loon (*Gavia immmer*)	No suitable habitat is present within the project area.	Large, clear lakes below 5,000 ft. elevation with at least a partially forested shoreline.
Fisher (*Martes pennanti*)	Project area does not contain the appropriate habitat characteristics to support fisher largely due to the lack of an adequate amount of contiguous suitable habitat.	Mature, mesic forested habitats. Strong affinity of forested riparian habitats.
Northern Bog Lemming (*Synaptomys borealis*)	No suitable habitat is present within the project area.	Bogs, fens and, wet alpine and sub-alpine meadows.
Townsend's Big-eared Bat (*Plecotus townsendii*)	Potentially suitable habitat within the project area would not be impacted by project activities due to project design.	Caves, mines, and abandoned buildings.

Species	Rationale for Elimination from Detailed Analysis	Preferred Habitat
Wolverine (*Gulo gulo*)	No suitable habitat is present within the project area.	Far-ranging omnivorous, habitat generalist.
Coeur d'Alene Salamander (*Plethodon vandykei idahoensis*)	Potentially suitable habitat within the project area would not be impacted by project activities due to project design.	Springs, seeps, spray zones.
Management Indicator Species and Others		
American Marten (*Martes americana*)	Project area does not contain the appropriate habitat characteristics to support marten largely due to the lack of an adequate amount of contiguous suitable habitat.	Variable mature conifer stands with canopy closures greater than 40 percent with abundant large, down woody debris
Forest Landbirds	Best addressed on a large scale and by ecosystem and habitat condition rather than on a species-by-species basis at the project level, particularly since any action, including no action, would be detrimental to some species and beneficial to others. The potential impacts on habitats utilized by forest landbirds are addressed in the analysis for other wildlife species that are analyzed in detail.	Diverse habitats, dependent on species.

Species Analyzed in Detail

Wildlife species analyzed in detail in the Wildlife Report are those that have been identified as species of concern within the project area that could potentially be affected by proposed activities. The detailed analysis for each species describes the environmental baseline and relevant habitat components that may or may not be affected by the alternatives, if they were to be implemented. Information presented in the analysis is based on scientific literature, wildlife databases, and professional judgment, along with field surveys and habitat evaluations conducted over the last four years.

Table 5 summarizes the species analyzed in detail, the rationale for analyzing them, and their preferred habitat.

Table 5. Wildlife species analyzed in detail.

Species	Rationale for Detailed Analysis	Preferred Habitat
Sensitive Species		
Flammulated Owl (*Otus flammeolus*)	Suitable habitat is present within the project area.	Mature to old growth ponderosa pine, Douglas-fir forest.
Black-backed Woodpecker (*Picoides arcticus*)	Suitable habitat may be present within the project area.	Mature conifer stands with numerous snags. Post-fire habitat producing an abundance of snags.
Pygmy Nuthatch (*Sitta pygmaea*)	Suitable habitat is present within the project area. Due to similarities in habitat requirements and potential impacts, this species will be analyzed with flammulated owl.	Ponderosa pine habitat, especially mature to old growth stands.
Fringed Myotis (*Myotis thysanodes*)	Suitable habitat is present within the project area. Due to similarities in	Caves, mines, and abandoned buildings, large snag habitat.

Species	Rationale for Detailed Analysis	Preferred Habitat
	habitat requirements and potential impacts, this species will be analyzed with flammulated owl.	
Western Toad (*Bufo boreas*)	Terrestrial and breeding habitat is present within the project area.	Adults occur in a variety of uplands. Breed in shallow ponds, lakes, or slow moving streams.
Management Indicator Species and Focal Species		
Northern Goshawk (*Accipiter gentilis*)	Suitable habitat is present within the project area.	Mature to old growth forest with a relatively closed canopy.
Pileated Woodpecker (*Dryocopus pileatus*)	Suitable habitat is present within the project area.	Forests with tall, large diameter dead or defective trees for nesting.
White-tailed Deer (*Odocoileus virginianus*)	Winter range and general deer habitat within the project area would not be impacted in a way that would result in a meaningful or detectable change.	Mosaic of habitat types that provide open parks for foraging and forested areas for thermal and security cover.

Environmental Consequences

The resource information provided in the Wildlife Report, especially as it relates to wildlife habitat analysis, includes past actions such as timber harvest that have influenced vegetation changes to create what now is part of the existing or baseline condition. The effects analysis considered project design (e.g. eliminating activities in areas of concern) and specific design features for wildlife that are described in the Wildlife Report and Appendix A, as well as applicable past, current and ongoing, and reasonably foreseeable actions outlined in Appendix E. Again, as a result of the wildlife analysis, only minor effects are expected to some sensitive and MIS wildlife species and there would be no effect to any threatened or endangered wildlife species. See Table 6 below for a summary of the effects determinations.

Table 6. Summary of effects determinations. See the Wildlife Report for further rationale supporting the effects determination for each species.

Species	Alternative 1	Alternative 2
Threatened and Endangered Species		
Woodland Caribou	No effect	No effect
Canada Lynx	No effect	No effect
Grizzly Bear	No effect	No effect
Gray Wolf	No effect	No effect
Sensitive Species		
Bald Eagle	No impact	No impact
Flammulated Owl	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 species	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 species
Black-backed Woodpecker	No impact	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 species
Black Swift	No impact	No impact
Harlequin Duck	No impact	No impact

Species	Alternative 1	Alternative 2
Peregrine Falcon	No impact	No impact
Pygmy Nuthatch	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 species	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 species
Common Loon	No impact	No impact
Fisher	No impact	No impact
Wolverine	No impact	No impact
Northern Bog Lemming	No impact	No impact
Townsend's Big-eared Bat	No impact	No impact
Fringed Myotis	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 species	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 species
Coeur d'Alene Salamander	No impact	No impact
Western Toad	No impact	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 species
Management Indicator Species and Others		
Northern Goshawk	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status
Pileated Woodpecker	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status
American Marten	No impact	No impact
White-tailed Deer	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status
Forest Landbirds	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status

Consistency with the Forest Plan and Other Regulatory Direction

Given the effects analysis and determination, and in consideration of design features described in Appendix A, the project wildlife biologist determined that both 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 (USDA Forest Service 1987). Therefore, these actions would also be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest. However, Alternative 1 may result in a trend toward a decline in habitat quality over time for

flammulated owl, pygmy nuthatch, fringed myotis, northern goshawk, pileated woodpecker, white-tailed deer and forest landbirds.

Hydrology

Affected Environment

The hydrologic analysis area includes the Brush, Cedar, Canyon, North Gold, South Twin, North Twin, and Tumbledown Creek watersheds (Figure 2). Stream reviews and surveys were conducted on project area reaches of these streams in 2005. Sensitive areas of most proposed treatment units, temporary road locations, existing stream conditions, and existing road conditions were examined during this review (see Hydrology Field/Survey Notes in project file).

Two of streams in the project area are listed on the impaired streams list (Idaho DEQ 303(d) list). North Gold Creek is listed as being impaired for sediment. Cedar Creek is listed as being impaired for temperature. Lake Pend Oreille is also listed under the IDEQ's IDAPA 58.01.02 for cold-water biota, salmonid spawning, primary contact recreation, domestic water supply, and special resource water. Lake Pend Oreille was first placed on the State of Idaho's 1994 Section 303(d) list in response to public comments concerning water quality and a nearshore TMDL was approved by the EPA in 2002.

Environmental Consequences

No Action – (Alternative 1)

Direct, Indirect and Cumulative Effects

No action would have no direct effects to aquatic systems or water quality. However, the no-action alternative would indirectly result in an increased chance of adverse effects to water quality.

Past wildfire suppression in the project area has increased the risk of severe, stand-replacing fires. Implementation of the No-Action alternative would not address these accumulated fuels in the project area and the risk of severe, stand replacing fires would be higher than under the proposed action. There would therefore be a higher risk of widespread vegetation and/or soil disturbance. When vegetation and organic matter on the soil surface are reduced by fire, interception and evapotranspiration are reduced, infiltration is decreased, and both overland and subsurface flow can increase. In turn, increases in overland flow and subsurface flow often translate into increases in base flows, stormflows and peak flows. Water quality would likely be adversely affected by increased sedimentation (Neary et al 2005). However specific effects from No Action are difficult to predict as the occurrence, intensity and magnitude of a future wildfire is uncertain.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

Design features and site-specific mitigation were developed to protect hydrologic resources in the project area from the activities proposed in Alternative 2. Appendices A, B and C contain design features and mitigation in their entirety. The following effects discussion highlights some of the more important design features.

Erosion and Sediment Delivery

Any significant erosion or delivery of sediment to floodplains, wetlands or streams in the project area would be avoided by implementing the design features and mitigation detailed in Appendices A, B and C. Highlights of these features include:

- Under the Inland Native Fish Strategy, commercial timber cutting would be prohibited in Riparian Habitat Conservation Areas (RHCA's). These RHCA's include 300-foot (slope distance) protection zones for streams that have fish; 150-foot protection zones for perennial streams with no fish; 100-foot protection zones for intermittent streams and sensitive landtypes; and 150 feet slope distance from the edge of the maximum pool elevation around ponds, lakes, reservoirs, and wetlands greater than 1 acre. Ephemeral draws would have a 50-foot (slope distance) protection zone if they are either directly tied to an intermittent channel or lack large woody debris and vegetation that prevent scouring or headcutting.

- Additionally, adjustments of RHCA buffers were made during several field reconnaissance outings. Portions of proposed units were dropped, hydrologically preferable, alternate road locations outside of RHCA's were identified, seasonal tributaries or intermittent streams and wetlands were protected with buffers, and the location of slash filter windrows and waterbars necessary to mitigate surface erosion in the RHCA's were identified.

- Landtypes with ratings of high for mass failure potential, surface erosion potential, and high or moderate sediment delivery potential would be avoided.

- All road construction would be temporary. These roads would be ripped and seeded, and recontoured where necessary. Currently inadequate or non-functioning road drainage features such as waterbars, ditches, and culverts would be improved or replaced.

- Ground-based tractor/mechanical harvesting would occur in such a manner that would minimize soil disturbance (for example working on a slash mat whenever possible) and would comply with Forest Plan and Regional Soil Quality Standards (see Soils report for more details).

- Mitigation measures to reduce sediment addition from existing road crossings was developed for North Gold Creek, Gold Creek, Granite Creek, Tumbledown Creek, and Kickbush Creek. Mitigation measures include adding a base of coarse gravel to the travelway, cleaning specific lengths of ditchline, replacing an undersized culvert at Tumbledown Creek and installing water bars or rolling dips. All of these measures have the potential temporary effect of initially increasing the amount of fine sediment addition to the stream. This temporary effect would be short lived and involve negligible amounts of fine grained sediment. Once ditchlines and new gravel have imbricated and armored to flows, potential sedimentation levels would reduce. Future sediment additions from precipitation and any increased traffic would be significantly reduced by these measures.

By incorporating the design features and mitigation summarized above into the project, no significant increase in erosion or sediment delivery would result from the proposed activities. Research studies and monitoring conducted on the Idaho Panhandle National Forest verify that when RHCA's or buffer strips are incorporated into timber sales, sediment delivery to stream channels is not measurable or is negligible (USDA Forest Service 1997-2006, Belt et al 1992, Reid and Hilton 1998).

Peak Flows

Small increases in peak flows that would result from the proposed treatments are not expected to have significant impacts on channel integrity. The past fire history of the area and the resilience of the stream channels supports this rationale.

Prior to effective fire suppression, the area's disturbance regime was characterized by large, hot, stand-replacing fires (Packsaddle EIS, 1995). This is evidenced by the even-aged, fire-origin stands dominating the present landscape, and by oblique aerial photos from 1933 which show much of the landscape in an open and brush covered state (Project File).

Under these more open conditions, precipitation in the form of rain and snow would not be influenced as greatly by the buffering capacity and precipitation interception of provided by a forest canopy.

Flows would have been flashier and peaks potentially greater than those experienced today. Streams would have developed under flow regimes with a higher range of variability than that experienced at present.

Spring peak flows and rain-on-snow peak flows would also have been greater due to a greater percentage of watershed areas exposed to accumulate additional snow loads and react to the influence of warm maritime air-masses that create rain-on-snow conditions.

The canopy reductions and minor peak flow increases caused by Alternative 2 across the watersheds in the project area would be well within the range of flow variability that historically occurred in these watersheds.

Existing channel characteristics including the amount of woody debris present would also add/provide resiliency to minor increases in peak flows.

No significant effects from peak flow increases are expected because predicted increases are small, pre-fire suppression flow regimes were much more variable then they are now and because design features designed to protect hydrologic resources and existing channel integrity would be implemented (Appendices A, B and C).

Effects on Flood Plains, Wetlands, Municipal Watersheds, Impaired Watersheds, Steep Slopes or highly erodible soils

Analysis produced little evidence that the activities proposed in Alternative 2 would significantly increase erosion, sediment delivery or peak flows. Landtypes with ratings of high for mass failure potential, surface erosion potential, and high or moderate sediment delivery potential would be avoided. The required RHCA buffers would provide shade and preclude any water temperature increases. It follows that there would be little potential for effects on flood plains, wetlands, municipal watersheds, impaired watersheds, steep slopes or highly erodible soils from the proposed activities.

Cumulative Effects

The cumulative effects analysis area is the same as the project area boundary, encompassing approximately 5,611 acres. This analysis area begins at the highest units in the respective watersheds and continues to the confluence with Lake Pend Oreille (It is extremely unlikely that effects would be realized upstream from harvest units).

The Tumbledown Fuels Reduction Timber sale area is spread over five watersheds with a minimal percentage of area treated within each watershed and a number of mitigation measures to protect

hydrologic resources. RHCA's, compliance with Regional Soil Quality Standards, Clean Water Act, National Forest management Act, and the 1987 Forest Plan, use of harvesters on a slash mat, avoidance of sensitive landtypes, use of temporary roads, and improvement of road crossings over bull trout bearing streams, strict adherence to selected BMP's, haul restrictions, and use of slash-filter windrows, would reduce the possibility for effects to occur, and the analysis of potential increases in peak flows shows that impacts from increases would be negligible. No other timber sales on Forest Service System Lands are proposed in the immediate vicinity of the project area at this time.

Cumulative effects were considered in 1995 for the Packsaddle timber sale. The project area for Packsaddle overlapped much of the sale area for Tumbledown and considered some of the same watersheds in the effects analysis. The Sensitive Fish Biological Evaluation in the Packsaddle Record of Decision, summarized habitat condition for the following streams; Gold Creek, Kickbush Creek, Cheer Creek, North Gold Creek, and Branch North Gold Creek. North Gold Creek is in the Tumbledown project area (Project File). The habitat conditions stated for North Gold Creek were, some erosion problems, mostly associated with private development near the mouth of the creek. Past logging activities within riparian and active stream channel areas were also evident. The Cumulative Effects section the Packsaddle ROD anticipated no cumulative effects with the proposed action since water and sediment yields would not be measurably affected (Packsaddle FEIS and ROD). Recent field observations of channel characteristics support this conclusion as trends in channel changes seem to be stabilizing and management-induced changes from roads or harvest units have had a negligible influence (Project File).

Ongoing and reasonably foreseeable activities in the vicinity of the sale area are detailed in Appendix E. These include: routine road maintenance, noxious weed treatment, treatment of the powerline corridor, public firewood collection, and fire suppression. Routine road maintenance would improve road drainage over time, reducing sediment delivery to streams and addressing point sources of chronic sediment delivery to streams. Noxious weed activities would follow guidelines established by the Sandpoint Noxious Weeds Control Project EIS (USDA Forest Service 1998). No effects, other than those described by the weed control project and its adaptive strategy, are expected to occur.

Maintenance of the BPA powerline corridor that runs through the project area has been conducted in strict accordance with the Inland Native Fish Strategy with activities monitored by the Forest Service. Tree felling is completed by ground crews and lopped and scattered resulting in no ground disturbance. To protect water temperature, only the tallest 1/3 of the overstory is removed during these operations. Large woody debris frequency is not affected by this project as the felled trees remain on site. The other habitat parameters, bank stability, undercut bank, width to depth ratio, and pool quality and frequency are not impacted in any way by these activities. Therefore, there is no effect to fisheries or watershed from felling these hazard trees. Standard regulations restricting the cutting of firewood amount to language that states that cutting near streams or wetlands would be avoided. The activities of fire suppression may in some instances retain existing watershed qualities, and prevent short term impacts associated with fire, such as, temperature increases, turbidity increases, and increases in peak flows. The intent of this project to reduce fire danger through silvicultural prescriptions, coupled with fire suppression and wise fire use, is expected to maintain water quality in the associated streams.

Compliance with the Forest Plan and Other Regulatory Direction

The proposed action (Alternative 2) would protect water quality and meet the aquatic resource standards and objectives described by the IPNF Forest Plan using a combination of Design Features (Appendix A), Best Management Practices (Appendix C) and Inland Native Fish Strategy guidelines (Appendix D). This combination of water quality protection measures would also make Alternative 2 consistent with Federal,

State, and local laws and requirements imposed for the protection of the environment. This consistency includes compliance with the requirements of the Federal Water Pollution Control Act as amended by the Clean Water Act, 33 U.S.C. §1251. Pollutants of concern would not increase in any water quality limited segments a result of implementation of Alternative 2.

More detailed compliance documentation and information is contained in the Hydrology Report, Appendix A (Design Features), Appendix C (Best Management Practices), and in Appendix D (Inland Native Fish Strategy Standards and Guidelines).

Fisheries

Affected Environment

Stream reviews and surveys were conducted on project area reaches of Brush, Cedar, Canyon, North Gold, South Twin, North Twin, and Tumbledown Creeks in 2005. Sensitive areas of most proposed treatment units, temporary road locations, existing stream conditions, and existing road conditions were examined during this review (see Fisheries Field/Survey Notes in Project File).

Fish community structure and habitat use in streams within the project area is controlled by physical barriers and size of habitat patches. Cedar and North Gold Creeks have gradual, relatively low-slope approaches to Lake Pend Oreille, which provides access for migratory fish from the lake up to the middle reaches of those streams. The Twin Creeks have extremely steep approaches from the lake to the streams that does not provide access for migratory fish. Nonetheless, North Twin has habitat patches large enough to support a resident fish population, whereas South Twin does not have patches large enough to support fish. Brush, Canyon, and Tumbledown Creeks are tributaries to Cedar Creek, but natural barriers to migratory fish exist for each stream . Despite those barriers, resident fish do occur in Canyon and Tumbledown Creeks.

The middle section of Brush Creek is not perennial and goes subsurface. A steep stream reach in the lower section of Canyon Creek serves as a natural barrier. The lower section of Tumbledown Creek flows subsurface or intermittently as it enters Cedar Creek.

Bull trout occur in North Gold, Gold, and Granite Creeks along the southern face of the lake. Anecdotal accounts indicate bull trout may have historically used Cedar Creek, however, survey data from the distant past (40+ years) do not corroborate the claim. Bull trout populations in North Gold Creek and other Pend Oreille streams are strong, steady, and viable as evidenced by reproduction trends (Figure 4). Westslope cutthroat trout, a management indicator species, occur in Canyon, Cedar, Tumbledown, and North Gold Creeks. Cutthroat populations in Tumbledown and Canyon Creek appear healthy and show limited signs of introgression with non-native rainbow trout (O. mykiss). The remaining fish-bearing streams in the project area are inhabited by eastern brook trout (e.g., Upper Cedar, N. Twin) and likely were historically inhabited by native resident cutthroat trout. Native cutthroat trout have been completely replaced by eastern brook trout in North Twin Creek. Although not observed during field surveys, shorthead sculpin likely have patchy distributions within some of these streams. Shorthead sculpin are widespread throughout North America.

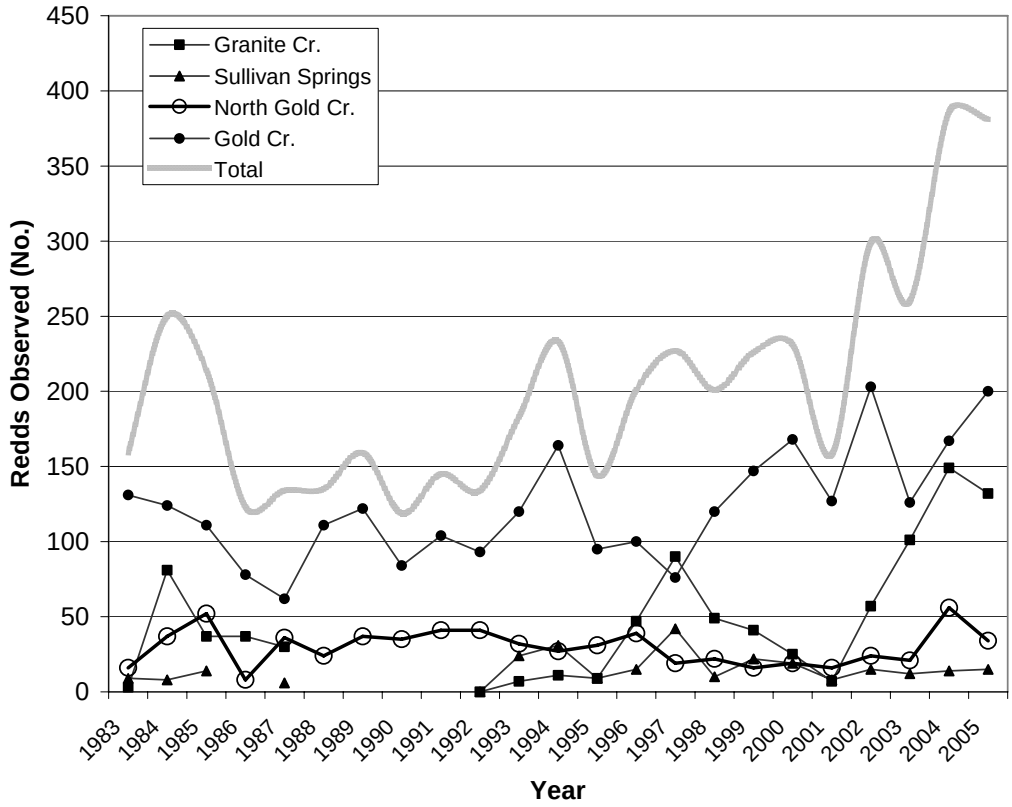

Figure 4. Trends in bull trout reproduction over the past 20 year period as measured by the number of redds observed in the respective stream. The broad gray line indicates the cumulative total reproduction for bull trout streams along the eastern face of Lake Pend Oreille (data from Idaho Department of Fish & Game). Granite Creek and Sullivan Springs were not surveyed from 1987 to 1992.

The streams within the project area are relatively small (2nd to 3rd order) and similar in geomorphic structure (Tumbledown Hydrology Report). Fish habitat conditions in the 2nd order streams (Brush, Canyon, Tumbledown, N. Twin, S. Twin) are typical of small order streams (i.e., moderate gradients, few deep pools), but vary by individual drainage depending the degree of past land use. Habitat conditions in the relatively larger (3rd order) Cedar and North Gold Creeks, include more heterogeniety of habitat types, greater pool depths, and larger functional habitat patches for fish. Cedar Creek has a highly altered riparian area because of the powerline, has warm thermal conditions, and is listed for temperature impaired (IDEQ 2002). Conversely, North Gold Creek has an intact Riparian Habitat Conservation Area and subsequently a cool thermal regime that can support bull trout. However, the lower mile of North Gold Creek is not in a state of dynamic equilibrium and experiences atypical channel headcutting, streambank erosion, and extended periods of flow intermittency. These conditions are most likely associated with past mining and homesteading efforts (riparian clearing and removal of in-channel LWD). Upper reaches of North Gold Creek and its tributaries appear to be functioning well (Project File).

For more specific information about water quality, habitat elements, channel conditions, and streamflow for the project area streams please refer to the Matrix of Conditions in the project file.

Environmental Consequences

This section documents the direct and indirect effects to specific aquatic habitat elements (i.e., INFS Riparian Management Objectives [RMO]) relevant to this project, overall effects to bull trout, and overall effects to sensitive species. This effects determination examines road maintenance for sensitive species; however, road maintenance as it affects Endangered Species (i.e., bull trout) has been analyzed previously in the Programmatic Road Maintenance Biological Assessment for the Idaho Panhandle National Forests.

No Action – (Alternative 1)

Direct, Indirect and Cumulative Effects

There would be no direct effects to fish populations or habitat resulting from this alternative. However, the no-action alternative would indirectly result in an increased chance of adverse effects to the fisheries resource.

Past wildfire suppression in the project area has increased the risk of a severe, stand-replacing fires. Implementation of the No-Action alternative would not address accumulated fuels and the risk of severe, stand replacing fires would be higher than under the proposed action. There would therefore be a higher risk of widespread vegetation and/or soil disturbance. When vegetation and organic matter on the soil surface are destroyed by fire, interception and evapotranspiration are reduced, infiltration is decreased, and overland flow and subsurface flow can increase. In turn, increases in overland flow and subsurface flow often translate into increases in base flows, stormflows and peak flows. Water quality would likely be adversely affected by increased sedimentation (Neary et al 2005). Changes in flow regimes and water quality could affect fish populations or habitat. However specific effects from No Action are difficult to predict as the occurrence, intensity and magnitude of a future wildfire is uncertain.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

The Tumbledown Hazardous Fuels Reduction Project would not directly affect temperature, sediment regime, habitat cover/complexity, pool frequency, or width/depth ratios because there are no fuel treatment units or road construction scheduled to occur within any RHCA (A complete list of design features, mitigation and conservation measures upon which the effects determination of this analysis is dependent can be found in Appendices A, B and D). The proposed culvert replacement on Tumbledown Creek would directly affect habitat connectivity by providing year-round upstream-downstream fish passage for native cutthroat trout within this stream. Improvements proposed for the existing road network for this project would reduce the amount of road-derived fine sediment being delivered to Granite, Toms Gulch, Tumbledown, North Gold, Kickbush Gulch, Gold Creek and other project-area streams over the long-term (1-10 years). This would transpire into small-scale improvements in spawning areas (cleaner gravel), better insect production and prey availability for native trout, and less native fish avoidance of road-impacted reaches. However, these and other road improvements (grading, brushing, ditch cleaning) to the road network may indirectly affect native cutthroat trout by temporarily increasing sediment delivery into Tumbledown, Cedar, Canyon, N. & S. Twin, and North Gold Creeks. This effect would be a short-duration pulse of elevated turbidity, which could temporarily displace or cause physiological stress to individual fish within the immediate vicinity (100 m downstream). The replacement of the culvert on Tumbledown Creek and realignment of the stream will reduce road-based

sedimentation into Tumbledown Creek over the long-term (Hydrology Report), but will indeed deliver some sediment to the stream during construction. The road treatments (e.g., reconditioning, “re-opening” roads) near RHCAs will not increase sediment loads in stream channels (see Hydrology Report). Furthermore, mitigation measures (Appendix A, C and D) and best management practices (USDA Forest Service 1988) would limit the increased risk in sediment production/delivery to negligible levels.

Effects on Bull Trout

A portion of the adfluvial population of bull trout from Lake Pend Oreille occupies one stream within the project area (North Gold Creek) and several others within the subwatershed (6th level HUC). Some of the road improvement work, namely ditch improvements and addition of crushed rock over crossings and crossing approaches, associated with this project would potentially deliver some fine-sediment into bull trout streams. No other road reconditioning actions (i.e., “re-opening” roads) would be performed within RHCAs of occupied bull trout streams. Because the road maintenance activities would be performed in compliance with the provisions of the Idaho Panhandle National Forests Programmatic Road Maintenance Biological Assessment, the road maintenance activities of this project have already been consulted upon with the U.S. Fish & Wildlife Service. The harvest and actions associated with fuels treatment adjacent to North Gold Creek would not deliver sediment to the stream and thus would not affect bull trout or designated Critical Habitat. This determination is based on the fact that the majority of streams in the analysis area do not provide potential habitat or are not inhabited by the species. Site specific effects analysis shows that those streams currently supporting bull trout would not be impacted.

Effects to Sensitive Species

Westslope cutthroat trout currently occupy Tumbledown, Canyon, and Cedar Creek. The current habitat conditions, although altered from ideal conditions (i.e., few large pools, habitat fragmentation, moderate loads of sediment), appear to support these small populations at present. Most project activities, such as the majority of fuel treatments would not adversely affect individual fish or the populations to which they belong; however, road reconditioning, road maintenance, and the replacement of the Tumbledown Creek culvert do pose risks of affecting fish and degrading fish habitat, by temporarily increasing sediment loads in project area streams. Sediment-related effects could affect westslope cutthroat trout through gill irritation, displacement, temporarily altered feeding habits, and even death. Sediment contributed from road maintenance activities would be negligible based on-site specific mitigation (i.e., not between spawning and emergence) and would not occur when embryos or fry were most susceptible to entrapment or oxygen deprivation. The combination of sediment-related effects (sedimentation, turbidity, and reductions in pool habitat) within Tumbledown Creek poses the greatest risk to this species. Based upon the low likelihood and anticipated short duration of negative effects, the effects of this project are not great enough to threaten the persistence of the westslope cutthroat trout population in Tumbledown Creek.

Cumulative Effects

This section addresses how this project contributes cumulatively to past, ongoing, and reasonably foreseeable activities’ effects on fisheries resources. The cumulative effects area examined for fisheries is the same as the project area boundary and encompasses approximately 5,611 acres. Proposed activities are spread over five watersheds with a minimal percentage of area treated within each watershed. This project has a low likelihood of negative site-specific, measurable effects to fisheries resources. No other timber sales on Forest Service System Lands are proposed in the immediate vicinity of the project area at this time. Other actions that have affected fisheries resources in the past include the powerline construction and ongoing maintenance, timber harvest, and road building; however, the legacy effects of those projects have already been incorporated into the analysis of this project by the establishment of a current environmental baseline. The actions tied to this project have low-risk effects, thus, there are no effects that would contribute to a cumulative effect over the long-term. Road maintenance has been

occurring and will most likely continue to occur in the area. Although road maintenance does put sediment in streams, it is only performed periodically and is designed to reduce long-term erosion of forest roads. Therefore the small, short-term effect of sediment delivery would not add to a cumulative effect of total sediment delivered.

Other ongoing and reasonably foreseeable activities include routine road maintenance, noxious weed treatment, treatment of the powerline corridor, public firewood collection, fire suppression, and development on private land. Routine road maintenance will improve road drainage over time, reducing sediment delivery to streams and addressing point sources of chronic sediment delivery to streams. Noxious weed activities would follow guidelines established by the Sandpoint Noxious Weeds Control Project EIS (USDA Forest Service 1998) and would not fish populations or habitat. .

Development and road building on private lands within the area (lower reach of North Gold Creek) are expected to continue and will likely produce measurable effects (e.g., fish avoidance and less use of habitat, except for the purposes of migration) to bull trout and designated Critical Habitat; however, those actions occur on private land and are not tied the actions of this project. .

Compliance with the Forest Plan and Other Regulatory Direction

The proposed action would not jeopardize the continued existence of bull trout or westslope cutthroat trout and is consistent with the Endangered Species Act. The proposed action would maintain habitat for bull trout (IPNF management indicator species, listed as a Threatened species under the Endangered Species Act) and westslope cutthroat trout (IPNF management indicator species, listed as a Sensitive species on the Region 1 Sensitive Species List), and viability would be maintained.

The proposed action would maintain habitat and thus would not affect the fishery potential, which in turn would not reduce the potential for recreational fishing opportunities as required by Executive Order 12962 signed June 7, 1995.

Forest Vegetation

Affected Environment

Most of the forest in the project area became established following a landscape scale fire in 1926. Since then, successful fire suppression has effectively eliminated fire as factor influencing stand development across this landscape. On dry forest types, this lack of fire has allowed thick stands of trees to develop. Natural openings that were kept open by fire in the past have become smaller or absent. Most dry sites are now occupied by homogenous, high-density, closed canopy stands dominated by Douglas-fir. These trees are crowding the once open-grown ponderosa pine and western larch that survived the 1926 fire. This competition for limited resources is predisposing relic ponderosa pine trees to western pine beetle attack (Samman, et al. 2000). Without the influence of fire or other disturbance, Douglas-fir is also out-competing the younger ponderosa pine and western larch in these stands. This preponderance of Douglas-fir (and in places, grand fir) facilitates the extensive spread of root disease and bark beetle caused mortality.

On moist forest types, because historic fire return intervals were longer, the effects of fire exclusion are more subtle. However, a reduction of fire adapted species and an increase in the amount of more shade tolerant species due to the exclusion of low- and mixed-intensity fires over the past 90 years has reduced ecological diversity. In combination with the effects of white pine blister rust, fire exclusion has caused

moist sites to be dominated by homogenous, high-density stands dominated by grand fir, Douglas-fir, lodgepole pine and western redcedar with negligible amounts of western white pine and healthy western larch. As on dry sites, root diseases and bark beetles are causing extensive mortality of Douglas-fir and grand fir. The greater amount of these shade-tolerant species and associated mortality on both the dry and moist forest types has increased surface fuel loading, fuel ladders, and crown densities.

Table 7 displays the current and historic cover types and structures in the Pend Oreille Subbasin and the Analysis Area. The existing condition information represents the cumulative effects of past disturbances and present activities including past harvest, fire suppression, disease and insect attack, and vegetation growth to the present. Compared to historic conditions, both the Pend Oreille subbasin and the project area have experienced a major decline in forest stands historically dominated by white pine, western larch and ponderosa pine, with corresponding increases in dominance by grand fir, cedar, western hemlock, Douglas-fir and lodgepole pine. Douglas-fir is the most abundant cover type in the project area. There are no stands that meet the minimum criteria for old growth in the project area. Existing conditions of forest vegetation in the project area are described in detail at the stand level in the silvicultural prescriptions (see Vegetation section of the Project File).

Table 7
Comparison of Stand Characteristics

(Percentage of Total Acres*)

Stand Parameter	Pend Oreille Subbasin (Historic)	Pend Oreille Subbasin (Existing)	Analysis Area (Existing)
Cover Type			
PP, WP, or WL	55	8	4
GF, DF, H, C, LP,	45	92	96

Structure

	Size	Age in Years	Pend Oreille Subbasin (Historic)	Pend Oreille Subbasin (Existing)	Analysis Area (Existing)
Shrub/Seedling/Sapling (early succession)	0-5”	0-20	23	28	11
Pole/Small	5-8”	20-50	13	4	13
Immature/Medium	> 8”	<100	23	39	49
Mature/Large	9-21+	>100	21	21	27
Old Growth	>21	All >150	19	7	0

- Percents are calculated for the stand level. There may be individual acres within stands that have different cover types and structure, which are not reflected in the percentages.
- PP=ponderosa pine, WP=white pine, WL=western larch, GF=grand fir, DF=Douglas-fir, H=hemlock, C=cedar, LP=lodgepole pine,

Environmental Consequences

No Action – (Alternative 1)

Direct and Indirect Effects

Overall forest cover type would not change in the next 10 years under the no action alternative. Stand composition of Douglas-fir and grand fir would continue to increase in relative abundance, with pine and larch decreasing over time. In the long term (more than 10 years), the cover types would likely become dominated by Douglas-fir and grand fir as well, due to a decrease in stand conditions favorable to western larch.

Barring large disturbances such as fire, storm damage or insect epidemic, forest structural classes are estimated to remain the same in the next 10 years. Mortality would continue throughout the stands along with some increase in growth on remaining trees. Mortality in root disease areas would continue to "open up" these areas and eventually trend them to early succession as the majority of large Douglas-fir are killed.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

The proposed action would have a direct effect on species composition by reducing the amount of Douglas-fir, grand fir, and lodgepole pine in treated stands. At the analysis (project) area scale, the amount of Douglas-fir cover types would be reduced by approximately nine percent (Table 8). While the actual forest cover type would not change for al treated stands, the relative abundance and health of the desired tree species (ponderosa pine, western white pine and western larch) would increase. Regardless of the resultant forest type classification, the proposed cutting would increase the relative abundance of desired species, increase the diameter and crowns of trees in the remaining stand, thus prolonging the presence of these trees over time (Project File - Silvicultural Rx's).

In all units except for Units 5, 8, 19 and 21 the silvicultural prescription calls for at least some regeneration cutting. This type of cutting would leave an open stand condition, allowing for enough sunlight and growing space for desired tree species to become established and dominate (Table 8). In other areas, selective cutting would enhance the health and promote desired species on both dry, and moist site immature forest stands, some of which in time could become old growth.

In many stands with a high composition of Douglas-fir the potential for future old growth would be limited as root disease would eventually kill susceptible species. (USDA Forest Service unpublished report, Rockwell 1917). However, planting root disease-resistant ponderosa pine, white pine and western larch would likely increase the acreage of potentially long-lived seral old growth in the long run, which is currently lacking. (Fins, Byler et al.2001, Fiedler and Lloyd 1992, Arno 1996)

In most units the prescription calls for an irregular shelterwood intermixed with commercial thinning. This would result in portions changing structure from immature to early succession (shrub/seedling/sapling structural stage). Converting immature forest structure to the early succession stage of stand development would increase the early succession average patch size while reducing those related to immature. These changes are greater than what would occur under the no action alternative.

Table 8
Vegetation Cover Type and Structure
(Percentage of 5611 Acre Analysis Area*)

Stand Parameter	Proposed Action (Alternative 2)	No Action (Alternative 1)
Cover Type		
PP, WWP, or WL	6	4
DF, GF, H, C, LPP,	94	96
Structure		
Shrub/Seedling/Sapling (Early Succession)	18	11
Pole/Small	12	13
Immature/Medium	44	49
Mature/Large	26	27
Old Growth	0	0

*Percents are calculated for the stand level. There may be individual acres within stands that have different cover types and structure which are not reflected in the percentages.
PP=ponderosa pine, WP=white pine, WL=western larch, GF=grand fir, DF=Douglas-fir, H=hemlock, C=cedar, LPP=lodgepole pine,

Cumulative Effects

Past activities and natural processes, which have created the existing vegetation condition, are described in the Affected Environment section. Natural processes such as insect and disease induced mortality are discussed as reasonably foreseeable influences on vegetation change. Ongoing activities that may cumulatively affect forest vegetation include fire suppression, and firewood cutting. Fire suppression would continue to allow understory trees (nearly always shade-tolerant) to proliferate and will continue to exacerbating problems in terms of forest composition and structure. Appendix E contains an expanded discussion of cumulative effects including a table of past, ongoing, and foreseeable activities and events.

Project activities guided by Scientific Findings of the Interior Columbia Basin Ecosystem Management Project, Northern Region Overview, and Pend Oreille Subbasin Geographic Assessment would contribute towards restoring historic forest composition and structure. The proposed treatments would trend many acres of both dry and moist site stands towards those conditions found historically on these sites. Without treatment, all stands would continue to develop along successional pathways that are outside the historic averages for the sites in the area. In this context, the area would continue to contribute to the imbalance between historic and existing forest composition at the subbasin scale.

Activities on private land, such as urban development and logging, have and will continue to modify the adjoining landscape in private ownership. From a vegetation standpoint, only a small percentage of private lands are trending toward the desired forest cover types of larch, white pine, and ponderosa pine, since private landowners are not choosing to invest in managing in this direction. Significant increases in late mature structures or old growth is not expected on private lands, and fragmentation is expected to continue with smaller patch sizes, more edge effect and less core area. It is predicted that historic ranges of variability in vegetation would not be restored on a landscape scale.

Compliance with the Forest Plan and Other Regulatory Direction

Alternative 1 (No Action) would not be consistent with Forest Plan objectives for promoting stand structures and species mix which reduce susceptibility to insects and diseases (USDA Forest Service 1987, p. II-32, (4)). Alternative 2 is consistent with this Forest Plan direction.

Site-specific silvicultural prescriptions are compatible with management area goals, and preferred species management has considered both biological and economic criteria (p. II-32). Silvicultural practices including cutting, site preparation and planting with seral species are designed to reduce the perpetuation of pest problems (pp. II-37 and II-38). Management of competing understory vegetation would be accomplished, where necessary, as a consequence of fuels reduction/site preparation treatments (p. II-38). All stands proposed for regeneration cutting are on lands suitable for timber production that can be adequately restocked within five years of the final cut (Project File). There are no allocated old growth stands in the Tumbledown project area and no treatments are proposed in old growth. Appendix F details how the project complies with Forest Plan old growth standards. More information concerning consistency with Forest Plan and other regulatory direction can be found in the project file.

Noxious Weeds

Affected Environment

Weed infestation levels in the project area after several years of weed treatment (see Project File) are as follows: spotted knapweed (moderate), goatweed (moderate), oxeye daisy (low-moderate), common tansy (low), sulfur cinquefoil (low), meadow and orange hawkweed (low), bull thistle (very low) and Canada thistle (low). See the project file for definitions of weed infestation levels.

Environmental Consequences

Effects Common to Alternatives 1 and 2

Cumulative effects with regard to existing weed infestations are expected to be low to moderate under either alternative. Weed treatment in the project area would likely continue based on priorities established in the Sandpoint Noxious Weed Control Project FEIS (USDA 1998). Under no action, there would be no disturbance conducive to weed spread. However, weeds could still be spread by hikers, wind and wildlife. Under the proposed action, required mitigation and monitoring would reduce but not eliminate the risk of weed spread.

With either alternative, cumulative effects with regard to new invaders are expected to be low when combined with all of the above past, current, ongoing, and reasonably foreseeable actions. With failure to implement the proposed action, because no new disturbance would occur, and because current treatment and monitoring would continue, no new invaders would be expected to become established. Under the proposed action, because of mitigation measures designed to detect and eradicate new invaders, no new invaders are expected to become established.

No Action – (Alternative 1)

Direct, Indirect and Cumulative Effects

If no action were implemented, there would be no direct impacts on the risk or rate of weed spread, since management practices would not change from current conditions. Indirectly, the continued increase in fuel loading could increase the risk of weed spread in the context of a higher risk of stand-replacing fires.

Past wildfire suppression in the project area has increased the risk of severe, stand-replacing fires. Implementation of this alternative would not address these accumulated fuels in the project area. The risk of severe, stand replacing fires would be higher than under the proposed action. There would therefore be a higher risk of widespread vegetation and/or soil disturbance, which would cause an increased risk of weed spread and introduction across the project area.

In the short term, the No Action alternative would contribute a low level of cumulative effects to the risk of weed spread. Over the long term, not implementing the proposed action would further increase the risk of severe stand-replacing fires. Should such a fire occur, it would likely cause existing infestations to spread to previously uninfested areas. However, the occurrence of a future wildfire in the project area is difficult to predict.

Proposed Action – (Alternative 2)

Direct, Indirect and Cumulative Effects

Implementation of the proposed action would increase the risk of weed spread to varying degrees. Weed prevention measures would reduce but would not eliminate the risk of direct and indirect impacts from project activities.

Cumulative effects with regard to existing weed infestations are expected to be low for oxeye daisy, Canada thistle, bull thistle, sulfur cinquefoil, rush skeletonweed, dalmatian toadflax, orange and meadow hawkweed, and common tansy, based on their current levels of infestation and the observed success of recent weed treatment efforts. Cumulative effects for spotted knapweed and goatweed would likely be moderate, given their current levels of infestation. Off-road infestations of spotted knapweed and common goatweed would be expected to persist, since these species are considered to be naturalized in the project area. Appendix E contains expanded discussion of cumulative effects including a table of past, ongoing, and foreseeable activities and events.

Compliance with the Forest Plan and Other Regulatory Direction

The No Action alternative meets Forest Plan direction by not creating disturbance conducive to new noxious weed invasions or spread of existing weed populations. Alternative 2 meets Forest Plan direction by providing moderate control actions through project design, as required by the Forest Plan, to prevent new weed species from becoming established.

Rare Plants

Affected Environment

Field surveys for rare plants were completed in 2005. The surveys targeted all areas proposed for treatment. Populations of clustered lady's slipper (Cypripedium fasciculatum), yellow lady's slipper (C. parviflorum Salisbury var. pubescens [Wildenow] O.W. Knight) and pine broomrape (Orobanche pinorum Geyer) were found in areas originally proposed for treatment; these areas have been dropped from the project and would be protected by site-specific buffers that have been established by the project botanists.

Some proposed activity areas contain suitable habitat for clustered lady's slipper and pine broomrape. Potential for occurrence of rare moonworts was found to be low throughout most of the project area. The surveys confirmed that there is no suitable aquatic, peatland, dry forest, subalpine or cold forest habitat in or near proposed treatment areas. Treatment areas were found to have very low potential to support any rare species other than clustered lady's slipper or pine broomrape. Complete results of the field surveys are in the project file.

Environmental Consequences

Effects Common to Alternatives 1 and 2

There would be no effect to any federally listed plant species, since none are suspected to occur in Bonner County, Idaho. There is no suitable aquatic, peatland, subalpine, moist forest, dry forest or cold forest guild habitat in proposed treatment areas. No direct, indirect or cumulative impacts would occur to habitat or species of these guilds under either alternative.

No Action – (Alternative 1)

Direct, Indirect and Cumulative Effects

There would be no direct effects to rare plants from implementation of this alternative. Indirectly, the continued increase in fuel loading could pose a threat to suitable rare plant habitat in the context of a higher risk of stand replacing fires (see Fire/Fuels section). Such fires could extirpate the populations of clustered lady's slipper, yellow lady's slipper and pine broomrape in the project area. Habitat suitability for these species may be reduced by high intensity fires.

When combined with the effects of past and ongoing fire suppression, implementation of this alternative would further increase the risk of severe stand replacing fires. Should such a fire occur, it may impact populations and/or reduce habitat suitability for clustered lady's slipper, yellow lady's slipper and pine broomrape, at least temporarily. the No Action alternative could have low, moderate, or high cumulative effects to these species and/or suitable habitat, depending on where a fire occurs and how severe it is. However, the occurrence and intensity of a future wildfire in suitable habitat for these species would be difficult to predict.

Proposed Action – (Alternative 2)

Direct, Indirect and Cumulative Effects

No cumulative impacts to clustered lady's slipper and pine broomrape populations would be expected to occur, since these species do not occur in proposed treatment areas. Implementation of the proposed action may impact suitable habitat for clustered lady's slipper and pine broomrape. However, the proposed treatments are compatible with natural disturbance regimes in these species' habitat (Project File). No cumulative impacts to populations of or suitable habitat for yellow lady's slipper would occur, since all such habitat has been excluded from proposed activities. By reducing the risk of stand-replacing wildfires, implementation of the proposed action may have long term benefits to habitat for these species.

Compliance with the Forest Plan and Other Regulatory Direction

A Forest Plan management goal is to "manage habitat to maintain populations of identified sensitive species of animals and plants" (Forest Plan, II-1). A Forest Plan standard for sensitive species is to "manage the habitat of species listed in the Regional Sensitive Species List to prevent further declines in populations which could lead to federal listing under the Endangered Species Act" (Forest Plan, II-28). This standard meets the requirements of the National Forest Management Act (NFMA) of 1976, Section 6(g)(3)(B), by providing for diversity of plant communities based on the suitability and capability of the specific land area. The Forest Plan also identifies the need to "determine the status and distribution of threatened, endangered and rare (sensitive) plants on the IPNF" (Forest Plan, II-18). Both alternatives would meet Forest Plan direction and provide for the viability of populations. There are no federally listed threatened or endangered species suspected to occur in Bonner County, Idaho (USDI 2008). Therefore, the project is consistent with the Endangered Species Act (1973) as amended.

Visual Quality

Affected Environment

The scenic character of the project area has been a forested environment with a mix of tree species for many millennia. Large stand-replacing fires have been the primary disturbance agent in this forested landscape. Forest composition has been altered in more recent decades by the exclusion of fire, resulting in a much higher percentage of Douglas-fir, grand fir and other shade-tolerant species than under historic conditions. This has resulted in a more uniform textured and colored timber canopy. This uniform canopy is currently undergoing a change to patchy openings created by root disease and bark beetles. These openings generally have tall brush and shrubs, which are a lighter color than that of the timber stands around them. Roading, logging and human installations such as power transmission corridors and towers have also altered the scenic character from historic conditions. The BPA/Avista powerline corridor runs the length of the project area.

The project area is bordered by National Forest system lands (NFS) to the east and a mix of private and NFS land to the north, west and south including the town of Lakeview approximately ¼ mile to the south. Much of the privately owned land has had some development or timber harvesting. The developments are home sites and wood lots.

This area is characterized as predominantly a common variety class. It can be seen from Sensitivity Level 1 and 2 viewpoints. The sensitivity Level 1 viewpoints are Lake Pend Oreille and the Whiskey Rock Campground. The highest portions of the project area can be seen from the lake as midground with some

small portions occurring in the foreground. These areas have an assigned VQO of Retention and Partial Retention. The Sensitivity level 2 viewpoint is Road 278. Road 278 provides many foreground and middle ground views of the power line corridor.

Environmental Consequences

No Action – (Alternative 1)

Direct and Indirect Effects

Without timber harvest or road construction, there would be no direct effects to the scenic conditions of the area. The existing power line corridor and roads would continue to dominate many of the foreground and middle ground views from Road 278. The continued growth of trees would mute the visual effects of tree lines and unnaturally shaped openings over time.

Cumulative Effects

Without timber harvest or road construction, there would be no direct effects to the scenic conditions of the area. The existing power line corridor and roads would continue to dominate many of the foreground and middle ground views from Road 278. The continued growth of trees would mute the visual effects of tree lines and unnaturally shaped openings over time.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

Timber harvest would result in a discernable change in pattern, form and color. However, these changes would blend with the natural landscape because layout and timber marking would incorporate Group boundaries and leave-tree patterns into the design of the units. Vegetation removal would repeat the form, line, color, and texture of the natural occurrences common to the surrounding areas. Prescribed burning activities would be expected to produce short-term effects. There would be a discernible change in color as spotty patterns are created due to needle scorch. This would be short-term and would appear somewhat like the dying clumps of Douglas-fir and grand fir in root disease pockets currently occurring across the project area.

A low- to moderate-intensity underburn of group shelterwood, dry site thinning, and rehabilitation units would have a short-term effect by showing varying degrees of color change (from shades of dark green to reds and yellows). The color changes would usually last for one growing season after the burn. Prescribed underburns generally leave a natural appearing landscape with a mosaic of vegetation patterns. This mosaic includes areas that do not burn at all, areas underburned with varying degrees of needle scorch, and areas where trees are killed. Open shrub fields would have a short-term color change from light green to black, or gray. This would generally last until spring green-up. In winter, the remaining mosaic of trees and shrubs would retain the texture and color of the landscape, unlike that of a high-intensity fire. Low- to moderate-intensity fires tend to be smaller and generally affect only a portion of the landscape viewed as middle-ground and background.

The proposed action would tend to reduce the appearance of artificial straight lines along the power line corridor wherever a regeneration cutting is applied next to them. Units that are treated with a thinning prescription would not be as effective as those treated with a regeneration prescription, but thinning would have a tempering effect on the artificial straight line. This would move the view towards its

assigned VQO as well as that of a less altered but more open landscape. This change would provide a more visually desirable landscape in the interim and achieve the Forest Plan assigned VQOs in the long term.

The proposed temporary road construction would be evident, but would have only a short-term effect on visual quality, given the landforms and the existing evidence of human activity on the landscape. Road cuts and fills would cause soil color contrast. However, decommissioning these roads after use would help reduce the amount of time the color contrast remained on the landscape. All roads would be fitted to the landform to achieve minimal cut and fill slopes.

Cumulative Effects

The cumulative effects analysis area consists of the project area and associated viewpoints outside the project area as described in the existing condition. Since project activities are designed to meet VQOs, there should be no cumulative effects on viewpoints outside the project area.

The visual change in the landscape caused by additional development on private lands (i.e. the powerline and associated corridor) cannot be predicted or designed. Therefore, there are no cumulative visual effects associated with proposed action. No other reasonably foreseeable actions are expected to affect the visual resource.

Compliance with the Forest Plan and Other Regulatory Direction

The proposed action would manage the visual resource by maintaining the visual quality objectives as described and required by the Forest Plan.

Fire and Fuels

Affected Environment

Suppression of all wildfires in the Tumbledown project area has been ongoing for nearly a century. Fire exclusion, has caused a substantial change in stand conditions and related fire behavior, especially in the dry habitat types of the project area. Changes in surface, ladder, and crown fuels have resulted in the potential for an increase in fire intensity and burn severity when fires do/will initiate. The arrangement and amount of fuels currently present can now carry a fire into the crowns of trees, resulting in fires of high intensity and severity. These intense fires are difficult to suppress, threaten human life and property, and can result in the loss of key ecosystem components (tree species such as ponderosa pine, white pine, and western larch). Erratic fire behavior of this nature within close proximity to urban residences can endanger lives and disrupt communities. These factors helped define the purpose and need of the project: to reduce hazardous fuels and lessen the risk of a severe wildfire by treating the vegetation and fuels on approximately 700 acres of Forest Service lands adjacent to private land and/or along Forest Service Road 278 within the Wildland Urban Interface (WUI).

Figures 5-8 depict the existing fuel conditions in the project area that can now carry a fire into the crowns of trees, resulting in fires of high intensity and severity which are difficult to suppress.

Figure 5. High fire risk areas

(Tumbledown Stand # 628-03-16)

Figure 6. High fire risk areas

(Tumbledown Stand # 628-03-16)

Figure 7. High fire risk areas.

(Tumbledown - Stand # 628-02-45)

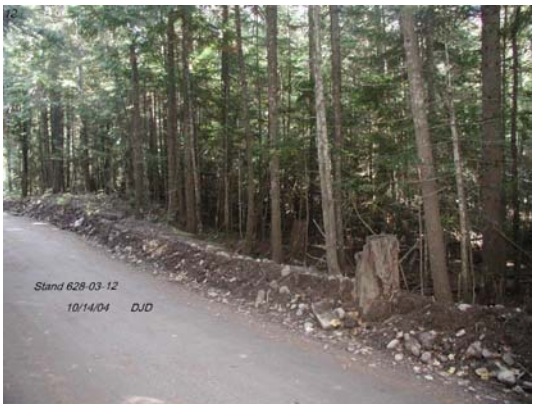

Figure 8. High risk fire areas.

(Tumbledown - Stand # 628-03-12)

Environmental Consequences

No Action – (Alternative 1)

Direct and Indirect Effects

In the absence of any kind of human-caused or natural disturbance, indirect effects would occur from the natural progression of forest growth and change. Vegetative conditions, fire behavior, and fireline intensity as described in the existing condition section would persist.

Over time more fuels would accumulate as trees continue to succumb to insects and disease, increasing the continuity of surface fuels, increasing ladder fuels, and thus lowering the gap between surface fuels and the canopy. The shade intolerant understory would continue to grow and replace the overstory as it falls to the forest floor, increasing the continuity of the canopy. The rate of spread and flame lengths in this situation would increase: combined with the ladder fuels, lowered canopies, and the continuity and

densities of the canopy, the potential for sustained crown fire would be increased. High flame lengths and fireline intensities directly affect our ability and strategies to suppress wildfires.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

The proposed treatments (Table 1) would reduce hazardous fuels and improve our ability to suppress fire in the Tumbledown project area. Research states that fuel treatments help modify fire behavior so that some wildfires can be suppressed more easily. The most appropriate fuel treatment strategy is often removing ladder fuels and decreasing tree crown density followed by piling and the burning of the piles to reduce surface fuels (Graham and Jain 2004).

The majority of the Tumbledown project area is currently classified as a Fuel Model 10 due to composition (dead, down material, live ladder fuels, and timber overstory), fuel loading, and expected fire behavior. In this fuel model, fires burn in the surface and ground fuels with greater intensity than the other timber litter models. Crowning, spotting, and torching of individual trees is more frequent in this fuel model leading to potential fire control difficulties. (Anderson 1982). This is due to the amount of 1, 10, and 100-hour fuels present, which under the right conditions (high temps, low relative humidity, etc.) are receptive and will carry a fire.

If this alternative were implemented, a majority of the area that is currently Fuel Model 10 would be modified to more closely represent a Fuel Model 8. The areas not included in this fuel model conversion are the riparian zones and leave pockets of moist habitat types such as western red cedar where no commercial harvest would occur.

In the short term (up to five years), slash created from the treatment activities would increase the fire hazard until it was properly treated according to fuel mitigations in the proposed action, or it naturally abated. The unmerchantable branches and other fuels that are left after harvest can substantially increase fuel load, increasing fire hazard until the fuel on site is treated with underburning or piling (USDA Forest Service 2003). The increased hazard from slash would be somewhat offset by stand density reduction. The removal of logs reduces fuels, and opening stands up would tend to force wildfires to burn on the ground and not in the tree crowns.

During harvesting operations, the potential of man-caused fire ignition increases. Common ignition sources include: equipment and vehicle operation, smoking, and arson. Standard timber sale contract provisions would require a timber purchaser to have fire suppression equipment on site and to take necessary fire precautions to prevent accidental wildfire ignitions. In the event of extreme fire conditions, harvest activities would be regulated or suspended until conditions improve. A timber sale administrator closely monitors the fire prevention requirements of the timber contract throughout the timber harvest operations.

The proposed action would remove part of the forest canopy, which would reduce the moderating effect of canopy (sheltering) on wind speed, so surface winds (winds beneath the canopy that effect surface fuels) would increase (Scott and Reinhardt 2001). Agee and Skinner (2005) have stated that when activities are followed by sufficient treatment of surface fuels, the overall reduction of fire behavior and severity outweighs the increased winds and consequently the reduction in fuel moistures.

A small portion of the project area is classified as Fuel Model 2. Fire spreads primarily through the fine herbaceous fuels, either cured or dead. Within the project area these areas are found on the ridge tops, rocky areas with shallow soils and the west/southwest facing aspects of the project area. These areas are

currently a mix of open ponderosa pine and Douglas fir with an annual grass shrub understory. Since these areas are a small portion of the project area and would remain a Fuel Model 2 post treatment they are not considered in this analysis.

The following figures compare predicted fire behavior outputs between Fuel Models 8 (post treatment), and 10 (pretreatment). The BehavePlus (v.3.0.1) model was used to compare the fire behavior outputs for the existing and post treatment conditions. The analysis reflects the 97th percentile weather conditions. The fire/fuels project file includes the environmental conditions and fire behavior estimates. A percentile is a value on a scale that indicates the percentage of a distribution that is equal to it or below it. For example a temperature at the 97th percentile is equal to or higher than 97 percent of the observed temperatures.

Figure 9: Output for BehavePlus (v.3.0.1) Existing Condition

Tumbledown 97th Percentile Weather Existing Condition

Surface Rate of Spread (maximum)	26.5 ch/h
Flame Length	9.0 ft
Critical Surface Flame Length	2.5 ft
Transition to Crown Fire ?	Yes
Active Crown ?	Yes
Fire Type	Crowning

Figure 10: Output for BehavePlus (v.3.0.1) Post Treatment

Tumbledown 97th Percentile Weather Post Treatment

Surface Rate of Spread (maximum)	6.8 ch/h
Flame Length	2.0 ft
Critical Surface Flame Length	5.8 ft
Transition to Crown Fire ?	No
Fire Type	Surface

The predicted fire behavior under post treatment conditions is much less intense and less resistant to control than the estimated fire behavior for the existing condition. The presence of Fuel Model 8 adjacent to key areas such as private land and values at risk would most likely result in a fire that has a lower probability of causing damage to those values. The limit of direct attack by hand crews is 4 foot flame lengths. Under existing condition Fuel Model 10 the predicted intensities would exceed the limit for direct attack by hand crews. Further under the existing conditions the fire behavior transitions into the crowns of trees and burns as an active crown fire (Figure 9). Under these conditions suppression efforts are often not successful.

By reducing the potential for high intensity and fast moving crown fires these fuel treatments would increase the chance of successful fire suppression and greatly lower the potential costs associated with large fires in the WUI. There would also be a considerable safety benefit to firefighters working to suppress a fire. The proposed action prescribes treatments that promote the existence and development of

long lived species such as western larch, ponderosa pine, and white pine. Removal of shade tolerant species (grand fir, Douglas Fir) reduces the available fuels that provide a pathway for fire to burn into the tree crowns. Removal of those species facilitates a reintroduction of the historic fire régimes, a desired condition consistent with the purpose and need.

Air Quality and Smoke Management

All prescribed burning would be conducted following the Memorandum of Understanding established between the States of Idaho and Montana to comply with State and Federal air quality standards. Burning would only occur when weather and atmospheric events (air conditions) are favorable for smoke dispersal. No burning would be initiated during times when air quality restrictions are in place. This practice has resulted in no air quality violations issued to the Sandpoint Ranger District.

Cumulative Effects

The cumulative effects area for all fire-related effects analysis for the Tumbledown project area encompasses all of the federal and non-federal lands that could burn from a fire burning into or out of the project area in any single fire event. This area is not definable on a map, because determining how large or how far a fire would travel is dependent on a number of variables including fuel conditions, temperature, relative humidity, wind, topography, and many others that cannot be determined until an ignition occurs. An example of how far and fast fires on the Sandpoint Ranger District can spread is the Sundance Fire of 1967, which traveled more than 16 miles and engulfed more than 50,000 acres, mostly within a nine-hour time frame (USDA 1968).

Current practices on private lands within and adjacent to the Tumbledown project area are expected to continue. Timber harvest would most likely occur on portions that are forested. Typical treatments on these lands usually include some form of partial cutting that focuses on removal of trees with the highest economic value, which are often the largest trees. This practice typically removes the large fire-resistant seral species that require abundant sunlight to flourish. Natural regeneration usually fills in any created openings. This type of environment tends to favor the reproduction of shade-tolerant species like Douglas-fir and grand fir. It is probably safe to say that inherent disturbance regimes and historic vegetation patterns would not likely be reestablished on these private land parcels.

Since private lands often include residences and other developments, fire would continue to be aggressively suppressed on private lands and National Forest lands in the vicinity. This is necessary, because reverting to the full range of historic disturbance patterns would generate significant threats to human life and property.

On National Forest System lands past timber harvesting (Falls Creek, Barton Hump, Barton Way, Upper Cedar, Packsaddle) and the combination of harvest, slash treatment, planting and subsequent thinning are moving these areas toward historic conditions where wildfires tended to be of lower intensity. The roads constructed for these projects will continue to provide quick-response access to wildland fires started in or near the project area..

Compliance with the Forest Plan and Other Regulatory Direction

A goal of the IPNF Forest Plan is to provide efficient fire protection and fire use to help accomplish land management objectives. Forest Plan standards for fire management, 2a through 2g, are listed on page II-38 of the Forest Plan (USDA 1987). The proposed action treats fuels in the project area through a combination of timber cutting, prescribed burning, and other fuels reduction methods. All of the standards associated with fire suppression and fuels treatment would be met through the implementation of those treatments.

Soils

Affected Environment

Site visits have been made to all proposed ground-base units in order to assess existing conditions and to field check the data records (Project File). More than a quarter of the proposed tractor ground (specifically Units 5, 10, 12, 15, 17, 19, 20, 21, 22, 23 and 32 – totaling 236 acres) has 4% or less existing detrimental disturbance to the soil and organic matter (Project File). In general, existing impacts were found to be localized and limited to small areas within each unit. Where old stumps are present, the ground in proximity is usually undisturbed and no visible or physical evidence of skidding remains. In areas where roads or skid trails are visible, the soil may be compacted, may also only show slight disturbance, or has recovered.

Environmental Consequences

No Action – (Alternative 1)

Direct and Indirect Effects

With the No-Action alternative, no new management-induced detrimental direct or indirect impacts would occur in the Tumbledown Project Area. No direct effects to soils would take place as no temporary road construction and fuel treatments would be added. Conversely, none of the existing unclassified roads (totaling ~1 mile) and classified roads (totaling ~0.2 miles) would be decommissioned.

There would be no compaction or displacement beyond the currently existing levels. Soil nutrients would continue to cycle, build up at current rates, and would not be subject to removal due to fuels reduction. Timber stands would continue to reflect past management practices that selectively harvested seral species, leaving the more pathogenically prone and soil nutrient demanding Douglas- and grand firs. Stand conversion to more site-appropriate tree species would be delayed or may never occur relative to the Proposed Action.

Across the landscape, tree mortality from pathogens, insects, and weather events would continue as in the past, which has a direct influence on the area’s recycling of organic matter and changes in fuel loading. Stands currently at high mortality risk would not be treated, which may increase insect and disease infestation levels and associated risks of stand loss due to wildfire, severe burning, erosion concerns, and loss of soil nutrients. On a landscape scale, ecosystem composition improvement and the promotion of more fire-resilient species, such as western larch and ponderosa-pine, would not occur. Several timber stands would continue to harbor increased fuel loads and move towards moderate to higher risks of losses should a fire occur.

Continued fuel buildup would increase the risk of high-intensity wildfires that could kill much of the vegetation in both upland and riparian areas. High soil temperatures produced during high-intensity fires can create water repellant surface soil conditions that greatly reduce water infiltration and increase overland flow and erosion. Increased runoff combined with a lack of vegetation cover to protect slopes and filter sediments could lead to increased peak stream flows, excessive sediment delivery, and consequent adverse impacts to soil quality.

The introduction of weeds and unwanted flora following a fire could also lead to higher competition between less desirable and native vegetation. In the absence of such a hot fire, nutrients would be retained on site.

Cumulative Effects

With no implementation, no new management-induced detrimental cumulative impacts would occur in the Tumbledown Project Area. No cumulative effects to soils would take place as no temporary road construction and fuel treatments would be added. Conversely, none of the existing unclassified or classified roads would be decommissioned.

When combined with the effects of past and ongoing fire suppression, not implementing the proposed action would further increase the risk of severe stand replacing fires. Should such a fire occur, the continued accumulation of dead and down fuel loads could contribute to an increased potential for locally severe fire effects on soils, including physical alteration of soil structure and development of hydrophobic layers.

Proposed Action – (Alternative 2)

Direct and Indirect Effects

The proposed vegetation and fuel treatment activities are expected to remove site nutrients with the harvest of tree boles on 671 acres using a combination of ground-based logging (~496 acres or 74 percent), skyline system (~165 acres or 24 percent), and several hand-thinned fuel breaks (~11 acres total or 2 percent). These vegetation management activities and associated temporary roads have the potential to cause detrimental soil disturbance, such as compaction and displacement, by removing an estimated 69 acres of the total activity area from a productive growing state (Project File). All landings associated with skyline and ground-based harvest would be located along existing or temporary roads. All of the 25 proposed harvest units would meet Regional soil quality and Forest Plan standards.

As a direct effect, harvesting on all sites would remove within each tree bole (and bark) about 22 percent of the potassium that is contained within a tree (Garrison-Johnston et al. 2004). This may have an indirect affect on some plants that remain in the stand. Following the management recommendations from the Intermountain Forest Tree Nutrition Cooperative (IFTNC) would minimize any additional loss of potassium and nutrients from treated areas by overwintering slash.

Post-harvest site preparation is proposed on 671 acres and consist of 388 acres (58 percent) of grapple piling, 272 acres (41 percent) of underburning, and 11 acres (1 percent) of hand piling (Table Soil-4; PF SOIL-21). No measurable negative effects on soils are anticipated from post-harvest underburning if soil moisture content is equal or above 25 percent when the burning occurs (Niehoff 1985 and 2002). When soils have adequate moisture conditions to retain their biological, chemical, and physical integrity, effects from the loss of forest floor can be minimized (Barnett 1989; Frandsen and Ryan 1985; Hungerford et al. 1991; McNabb and Cromack 1990).

Fuels reduction and stand improvement activities would reduce the effects that a wildfire would have on soils because there would be a reduction in currently elevated surface fuel loading on treated sites that otherwise would have the potential to cause higher levels of severely burned soils.

Coarse woody debris and organic matter would be retained at recommended levels (Graham et al. 1994) in all units, thereby adhering to the Region 1 and Forest Plan Standard to maintain sufficient microorganism populations for long-term site productivity. Design features (Appendix A), including

nutrient management recommendations, would ensure compliance with the Forest Plan Standard to maintain sufficient nutrient capital

Direct effects due to temporary road construction totaling less than 1 miles are predicted in proposed Units 16, 17, 18, 30, and 32. However, the disturbance (totaling ~3.1 acres) in addition to the proposed harvest treatments would be less than or equal to 14 percent in each activity area (Soils Report). Approximately 0.3 miles of currently open unclassified roads in the project area would be classified and added to the system.

Upon treatment completion, all temporary roads (<1 mile), ~1 mile of reconditioned unclassified roads, and ~0.2 miles of currently impassible classified roads will be decommissioned and removed from the system (Soils Report p. 20). This would include culvert removal, decompaction and re-contouring of the road prism, seeding, and incorporating woody debris and organic matter. Anticipated results would provide for improvements in hydrologic function, recovery of soil productivity, improved infiltration, and reduced hydrologic effects from road surface runoff (Switalski et al. 2004).

Cumulative Effects

Cumulatively, past, present, and foreseeable actions on NFS lands would impact the soil resource physical properties (i.e. soil compaction/displacement) on approximately 69 to 73 acres on federal lands within the activity areas (Soils Report). The disturbance is predicted to occur primarily in activity locations subjected to ground-based logging. None of the proposed units presently exceed Soil Quality Standards and all are expected to meet Regional and Forest Plan requirements after harvest and site-prep activities are concluded.

While wildfire suppression would continue in order to protect private property, water quality, and other resource values, the proposed treatments would increase the ability to safely use prescribed fire, periodically reducing fuel loads, thereby reducing the potential for larger scale fires and its cumulative effects. Appendix E contains expanded discussion of cumulative effects including a table of past, ongoing, and foreseeable activities and events.

Compliance with Forest Plan and Other Regulatory Direction

The proposed action would meet Forest Plan Standards. Cumulatively, soil-disturbing activities would not exceed 20 percent detrimental conditions and would maintain at least 80 percent of each activity area in a condition of acceptable productivity potential (Soils Report). Potential detrimental disturbance may affect 73 acres (including system roads) out of the 671 acres proposed for harvest and site treatments in the Tumbledown Project Area.

The proposed action would meet Region 1 Soil Quality Standards. Cumulatively, soil-disturbing activities would not exceed 15 percent detrimental conditions and would maintain at least 85 percent of each activity area in a condition of acceptable productivity potential (Soils Report). Potential detrimental disturbance may affect 69 acres (without system roads) out of the 671 acres proposed for harvest and fuel treatments.

Heritage and Cultural Resources

The National Historic Preservation Act (16 U.S.C. 470) provides direction for Federal agencies to establish a program for preservation of historic properties. In compliance with this act, a review was conducted to determine if cultural resource surveys had been conducted within the project area, and if

cultural resource sites had been recorded. Results of cultural surveys were shared with the State Historic Preservation Office (SHPO) for concurrence. Potential impacts to sites eligible for the National Register of Historic Places (NRHP), as well as for those not yet evaluated, were considered in this analysis. In accord with 36 CFR 800, Protection of Historic Properties, it is the policy of the Forest Service to protect those sites determined NRHP eligible, as well as those sites not yet formally evaluated. The SHPO concurred that the project would not directly or indirectly affect cultural resources within or directly adjacent to the project's area of potential effect. Site-specific project design features developed to protect heritage resources, if any, are listed in Appendix B.

Heritage and Tribal interests are regulated by federal laws that direct and guide the Forest Service in identifying, evaluating and protecting heritage resources. We have consulted with interested tribes and they had no concerns about the project (Project File). We have also consulted with the State Historic Preservation Office and they reviewed and concur with our determination of effects. Based on the heritage resource reports located in the project file and the design features in Appendix A, the proposed action would comply with the Natural Historic Preservation Act.

Environmental Justice and Civil Rights

Executive Order 12898, issued in 1994 orders Federal Agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Order also directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife. The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, federally assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally Assisted Programs, as amended (42 U.S. C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin.

State of Idaho 2000 census data reported 36,835 people living in Bonner County. Demographically, Bonner County is 96.6% Caucasian, 1.6% Hispanic/Latino, .9% Native American, 0.9% other races or mixed races. Census data reported that the 1999 per capita personal income was $17,263 for Bonner County (rank = 11th in state). The statewide unemployment rate in 2000 was 5.8% and Bonner County was 7.3%.

None of the alternatives restrict or alter opportunities for subsistence hunting and fishing by Native American tribes. Tribes holding treaty rights for hunting and fishing on the Idaho Panhandle National Forest were included on the project mailing list and have the opportunity to provide comments on this project.

Implementing the proposed action alternative would create more employment and income opportunities than by implementing the no action alternative. Implementation of the proposed action (Alternative 2) would not likely adversely affect minority or low-income populations. The proposed activities would not result in demographic changes such as displacement of minorities, geographic changes such as land use, or economic hardship such as an increase in taxes. The proposed action would not have negative effects on public health. Conversely, beneficial effects such as increased opportunities for employment would occur. Timber sale and service contracts would be offered without prejudice toward any particular group, under federal laws, regulations and policies.

List of Preparers

This section includes a list of preparers of the environmental document. The following individuals were primarily responsible for developing and reviewing the environmental analysis.

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Agencies and Organizations Consulted

Federal, State, and Local Agencies

- US Fish and Wildlife Service (FWS)
- Idaho Department of Environmental Quality
- Idaho Department of Parks and Recreation
- Idaho Department of Fish and Game
- Kalispel and Coeur d'Alene Tribes
- Bonner County Urban Interface Fire Mitigation Committee (BONFIRE)
- Idaho Department of Lands

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