

**APPENDIX A**

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**DRAFT Findings of No Significant Impact (FONSI)**

*FOR THE*

**Holland Pierce Fuels Reduction and Forest Health Project  
Environmental Assessment**

Swan Lake Ranger District

Flathead National Forest

Missoula County

August 12, 2005

In accordance with CFR 1508.13 and direction provided in the Forest Service Handbook (FSH 1909.15, Chapter 40, Section 43.1), I have determined that the management action included in the Holland Pierce Fuels Reduction and Forest Health proposal is not a major Federal action; and, that the implementation of the proposal will not significantly affect the quality of the human environment. Accordingly, I have determined that an Environmental Impact Statement need not be prepared for this project. I have followed the implementing regulation for NEPA (40 CFR 1508.27) and other criteria for determining the significance of effects.

\_\_\_\_\_  
Responsible Official

\_\_\_\_\_  
Date

Before making my determination, I have carefully reviewed and considered the following information:

- ◆ The direct, indirect, and cumulative effects of these actions as documented in the Environmental Assessment (EA) for the Holland Pierce Fuels Reduction and Forest Health Project;
- ◆ The analysis documentation in the Holland Pierce Fuels Reduction and Forest Health Project File;
- ◆ Comments received during the scoping for this proposal; and,
- ◆ Past experiences with fuels reduction projects on the Flathead National Forest.

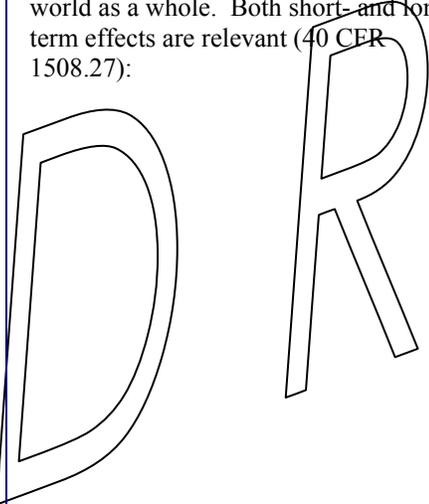
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The Interdisciplinary (ID) Team and I have “screened” the management actions included in the Holland Pierce Fuels Reduction and Forest Health proposal for “significant impact”. The results of this screen are summarized on the following pages.

**Significant**, as used in NEPA, requires consideration of both **context** and **intensity**.

**I. Context**

Criteria	Remarks
<p>This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR 1508.27):</p> 	<p>The effects of the proposed actions are limited in context. The project area is limited in size (1,652 acres of mechanical treatments and 107 acres of hand treatment) and the activities limited in duration (management actions associated with the proposal would be completed within a 3-year time frame). Effects are local in nature and are not likely to significantly affect regional or national resources.</p> <p>The project is located adjacent to private property and homes on the lower slopes of the project area (EA, Figure 2). As such, the forest land surrounding these private lands would be affected by this proposal. The people most affected by the project will be the local residents in the adjacent lands. This action is also a continuation of fuels and thinning projects that have occurred for many years on the Flathead National Forest and elsewhere across the Northern Region and the nation as a whole, without significant effects. Short-term adverse effects would be mitigated through implementation of the Standards and Guidelines in the Land and Resource Management (Forest) Plan for the Flathead National Forest, Best Management Practices, and the design features (EA, Appendix B) developed specifically for this project.</p> <p>The project design features minimize and avoid adverse impacts to the extent that such impacts are almost undetectable and immeasurable, even at the local level. These design features include, but are not limited to, protection of riparian habitat, seasonal and operations restrictions to avoid impacts to grizzly bear habitat; protection of sensitive or threatened plant species, protection of the soil resource, reclamation of temporary roads, and noxious weed abatement.</p> <p>Within the context of the landscape as a whole, or at the stand level, the ecological consequences are not found to be significant in either the short- or long-term.</p>

**II. Intensity**

This refers to the severity of impact. The following are considered in evaluation intensity (40 CFR 1508.27):

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Criteria	Remarks
<p>1. Impacts may be both beneficial and adverse. A significant effect may exist even if on balance, the effects will be beneficial.</p>	<p>Both beneficial and adverse effects have been taken into consideration when making this determination of significance. While there will be beneficial effects, this action does not rely on those effects to balance adverse environmental impacts. Detailed specialist reports (Wildlife, Fisheries, and Plant BAs and BEs; Forest and Regional Scales – Compatibility with NFMA Requirements for Maintaining Species Viability; Water and Soil Resources Reports, Noxious Weed Report, Cultural Resources Report, Fuels and Air Quality Report) included in the Project File contain comprehensive effects analyses, and the findings from these resource-specific reports are incorporated by reference and summarized in the EA.</p> <p>It is my determination, based on review of these analyses and consultation with specialists, that through careful incorporation of specific design features, as described in Appendix B of the EA, the Proposed Action, including mechanical and hand fuel reduction treatments, burning of thinning slash and natural forest fuels, and temporary road construction, would not have a significant impact on the environment. All effects would be minimal or temporary. None are deemed irreversible or irretrievable and do not set in motion further effects. All potential direct, indirect, and cumulative effects are evaluated in the EA, specialist reports, and BAs and BEs.</p>
<p>2. The degree to which the Proposed Action affects public health or safety.</p>	<p>The fuel reduction treatments are designed to increase the efficiency of fire suppression efforts and reduce risks to firefighters, local residents and the public, structures, and natural resources. The implementation of these treatments would result in improved community safety because the fuel reduction would allow direct suppression tactics by firefighters, which would increase the chance of suppressing the fire before it reaches the private property.</p> <p>All burning of thinning slash and natural fuels would comply with State Air Quality Standards and be coordinated through the Montana Airshed Group.</p> <p>Dust from timber hauling activities would be controlled using the dust abatement requirements within the stewardship/timber sale contract provisions.</p> <p>Herbicide treatments of weeds would be conducted in full compliance with label direction and in accordance with, and under decision authority of the Flathead National Forest Noxious and Invasive Weed Control EA and Decision Notice (USDA May 2001) (Project File Exhibit H-8), to which the Holland Pierce Fuels Reduction and Forest Health EA tiers. These treatments would not affect public health or safety (Appendix B and Project File Exhibit G-14).</p> <p>Project design features have been developed to address public safety concerns associated with the proposed salvage harvest and associated actions. I believe that the Proposed Action would not have any significant negative impact to public health or safety. The beneficial impact anticipated is a desirable improvement relative to public health and safety, but this improvement does not rise to a level of a significant agency action.</p>

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<p>3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.</p>	<p>The project area does not contain, and is not near to, any of the unique characteristics that would be significantly impacted. No areas have been identified as ecologically critical.</p> <p>Heritage surveys have been completed and no previously undiscovered sites within the project area boundaries were found (EA, page 40 and Project File Exhibit G-15).</p> <p>The project area includes wetlands and water howellia habitat. The project design includes features to protect wetlands, howellia ponds, and riparian habitat conservations by avoiding such areas in project design (Appendix B). Impacts to wetlands would be avoided during project layout and under contract provisions for timber harvest. The project BA for howellia finds that the Proposed Action is not likely to adversely affect this plant.</p> <p>In recognition that the project includes important wildlife habitat for grizzly bears, the project has been designed to comply with the Swan Valley Grizzly Bear Conservation Agreement (SVGCA) to insure that the linkage zones and disturbance impacts are within acceptable standards as described in the SVGCA (EA, page 26 and Project File Exhibit G-1). The project BA for grizzly bears concludes that this action is not likely to adversely affect grizzly bears. The project design includes seasonal and operations restrictions to avoid impacts to grizzly bear habitat (Appendix B).</p> <p>Based on this information, I conclude that the proposed actions would have minimal effects on unique resources.</p>
<p>4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.</p>	<p>Based on the limited context of the project, my review of comments received during the scoping of this project, and the analysis documented in the EA and Project File, I do not find any highly controversial effects to the human environment.</p> <p>Some comments received on the proposal included listings of references, some of which were presented as opposing science. The ID Team reviewed these comments and citations and evaluated them in terms of applicability to the Holland Pierce Fuels Reduction and Forest Health proposal (Project File Exhibit C-5).</p> <p>I conclude that the Proposed Action is not considered highly controversial by professionals, specialists, and scientists from associated fields of forestry, wildlife biology, soils, fisheries, and hydrology. While the proposal may be controversial, I do not believe that there is significant controversy over the effects of this action.</p>

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<p>5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.</p>	<p>Based on my review of comments received during the scoping of this project and the analysis documented in the EA and Project File, I find the possible effects on the human environment that are uncertain or involve unique or unknown risks are minimal or non-existent.</p> <p>Given the nature of the trees and vegetation to be removed and the large proportion to be left, the effects to the quality of the human environment are not significant. The agency has considerable experience in such projects and the consequences of such actions are well established and predictable.</p> <p>A technical analysis (EA and Project File) that discloses potential environmental impacts (which is supportable with use of accepted techniques, reliable data, and professional opinion) has been completed. I believe that the impacts of implementing this proposal are within the limits that are considered thresholds of concern.</p>
<p>6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.</p>	<p>The Holland Pierce Fuels Reduction and Forest Health proposal represents a site-specific project that does not set precedence for future actions or present a decision in principle about future considerations. Any proposed future project must be evaluated on its own merits and effects. The proposed actions are compatible with the Forest Plan, and the capabilities of the land. I believe that this action does not represent a decision in principle about a future consideration.</p>
<p>7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by timing an action temporary or by breaking it down into small component parts.</p>	<p>Connected, cumulative, and similar actions have been considered and included in the scope of the analysis.</p> <p>The analysis accounts for past, present, and reasonably foreseeable Forest Service, Plum Creek Timber Company, and by private landowners actions within the project area (Project File Exhibit F-2).</p> <p>Based on my review of the analysis and disclosure of effects in the EA, specialist reports, BAs and BEs, and other analyses in the Project File, I conclude that the Holland Pierce Fuels Reduction and Forest Health proposal does not represent potential cumulative adverse impacts (EA, Table 3).</p>
<p>8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.</p>	<p>I am not aware of any features in the affected area that are listed or are being considered for listing on the National Register of Historic Places.</p> <p>Heritage surveys have been completed Holland Pierce Fuels Reduction and Forest Health Project Area and no previously undiscovered sites within the project area boundaries were found (Project File Exhibit G-15). The potential for impacting undiscovered sites is mitigated by compliance with Forest Plan standards and guidelines, and through the design features included as part of the Proposed Action (Appendix B). In the event such resources are discovered during project implementation, they will be evaluated and protected. I believe that this action will not have a significant effect on scientific, cultural, or historical resources.</p>

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<p>9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.</p>	<p>No threatened or endangered species or its habitat would be adversely affected by the implementation of the Proposed Action. Biological Assessments (BAs) for threatened and endangered species have been completed for the proposal, these BAs concluded with the following determinations:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Species</th> <th style="text-align: center;">Determination</th> <th style="text-align: center;">Project File Exhibit</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Bald eagle</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-1</td> </tr> <tr> <td style="text-align: center;">Grizzly bear</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-1</td> </tr> <tr> <td style="text-align: center;">Gray wolf</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-1</td> </tr> <tr> <td style="text-align: center;">Canada lynx</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-1</td> </tr> <tr> <td style="text-align: center;">Bull trout</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-8</td> </tr> <tr> <td style="text-align: center;">Water howellia</td> <td>May affect, not likely to adversely affect</td> <td style="text-align: center;">G-16</td> </tr> <tr> <td style="text-align: center;">Spalding's catchfly</td> <td>No effect</td> <td style="text-align: center;">G-16</td> </tr> </tbody> </table>	Species	Determination	Project File Exhibit	Bald eagle	May affect, not likely to adversely affect	G-1	Grizzly bear	May affect, not likely to adversely affect	G-1	Gray wolf	May affect, not likely to adversely affect	G-1	Canada lynx	May affect, not likely to adversely affect	G-1	Bull trout	May affect, not likely to adversely affect	G-8	Water howellia	May affect, not likely to adversely affect	G-16	Spalding's catchfly	No effect	G-16
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<p>10. Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment.</p>	<p>As described in the EA (Regulatory Framework and Consistency sections for each resource area), the Proposed Action is consistent with all applicable Federal, state, or local laws or requirements imposed for the protection of the environment, including:</p> <ul style="list-style-type: none"> <li>▪ The National Forest Management Act (NFMA)</li> <li>▪ The National Environmental Policy Act (NEPA)</li> <li>▪ The Endangered Species Act</li> <li>▪ The Clean Water Act and Montana State Water Quality Standards</li> <li>▪ The Clean Air Act</li> <li>▪ The Migratory Bird Treaty Act</li> <li>▪ The National Historic Preservation Act</li> <li>▪ The American Graves Protection and Repatriation Act</li> <li>▪ The Environmental Justice Act</li> <li>▪ The Healthy Forests Restoration Act</li> </ul> <p>The Proposed Action is consistent with Forest Plan direction.</p> <p>I have concluded that the Proposed Action does not violate any Federal, state, local laws or requirements imposed for the protection of the environment.</p>																								

## **APPENDIX B**

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### **I. Project Design Features**

The following project design features are associated with the implementation of the Holland Pierce Fuels Reduction and Forest Health Project.

#### **A. Timing of Activities**

1. Implementation (sale layout and preparation) of the project would begin in late winter of 2005/2006. The contract(s) would be awarded beginning in late summer / early fall 2006. Operations are expected to commence in late fall / early winter 2006, and be completed by December 2008, a period of approximately 2 ½ years.
2. All BMP's (drainage corrections and sediment sources) on haul routes are to be in place and functioning before hauling commences, with the possible exception of frozen ground conditions existing that would preclude construction operations, and kept functioning throughout the duration of hauling activities, and left in proper functioning condition when the project is complete (Project File Exhibit G-12).

#### **B. Public Safety**

1. Contracts will require the contractor to clearly post signs warning the public of nearby activities and truck hauling traffic associated with the treatments.
2. Fuels specialist or designated liaison will notify nearby landowners prior to fuel reduction activities commencing on NFS lands that are adjacent to their properties.
3. Trailhead areas for the East Holland Trailhead, and Holland/Gordon Trail #35, and Owl Packer Trailhead) will be clearly posted warning users of activities taking place along trail systems in the area. Temporary trail closure orders may be in effect and posted at trailhead areas. Any activities in designated campgrounds, Owl Packer Camp, or Holland Lake Lodge will be post or pre-season.
4. Public announcements will be made to notify the public that portions of trails would be closed for periods of time while activities take place.

### **C. Special Use Permits**

All permitted improvements, including recreation residences, water transmission lines, irrigation water ditches, and irrigation water pipe lines (authorized by special use permits) will be clearly marked and protected during project implementation.

### **D. Soil Productivity**

1. All fuel reduction treatments are designed to meet Regional Soil Quality Standards that restrict detrimental soil disturbance to less than 15 percent of an activity area.
2. Excavators disturb relatively small amounts of soil compared to dozers; therefore, any mechanized piling or other site preparation work would be accomplished with excavators.
3. Any pre-existing skid trails, temporary roads, and landings will be re-used to the extent practicable for entry to previously harvested treatment areas to minimize additional impacts.
4. For dispersed skidding, ground-based skidding equipment will be restricted to conditions when soil moisture levels are low (determined using the “hand squeeze method”), or during winter conditions, when the ground is frozen or snow covered. The hand squeeze method is described in Exhibit H-5 of the Project File.
5. When operating during summer or on dry soil conditions, dispersed skidding must not remove organic matter from more than 15 percent of the activity area (cutting unit). When bare soils exceed 15 percent of the unit, the risk of soil erosion becomes high and the risk of nutrient losses increases. When operating during winter conditions, any snow on the approved skid trail locations will be compacted. Equipment will operate only on 6 inches or more of compacted snow and/or frozen ground. Skidding can commence and continue as long as the depth of compacted snow and frozen soil is at least 6 inches thick. Skid trails can be spaced closer than 75 feet when these winter conditions exist.
6. Outside of winter conditions on dry soils, ground-based skidding equipment will be restricted to designated skid trails obligated to this use, or where slash mats are specifically created and designed for soil protection due to sensitive soils (typically created only in a harvester-forwarder system operation). Where designated skid trails are required, main skid trails would be spaced 75 to 100 feet apart except where converging at junctions or landings.
7. To reduce the risk of cumulative effects where existing soil disturbances cover more than 5 percent of the proposed treatment area, operation of mechanized

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harvest equipment would only occur where “winter conditions” exist as described above. These conditions apply to units 19, 25, and 29 south of FDR #79.

- 8.** All or a portion of the following actions will be used to restore soil quality on detrimentally disturbed ground such as designated ski trails and landings, where monitoring results determine a need to do so:
  - a.** Rip heavily used skid trails and landings with an excavator to lessen compaction;
  - b.** Plant Montana-certified weed free seed mix, as specified, which would add organic matter to the soil and mulch to the surface (as determined by the Forest Soil Scientist), and
  - c.** Plant native shrubs that will lessen compaction as they grow, where needed to augment natural vegetation.

The combination of these actions will be based on the condition of the site being restored. These actions do not result in instant restoration; rather they begin the restoration process. The overall goal is to reduce the amount of detrimental soil disturbance through implementation of the design features.

- 9.** All temporary roads on NFS lands will be reclaimed after use, as soon as logistically practicable. Temporary roads will be reclaimed using a combination of the following methods:
  - a.** Re-contouring the entire road template to natural ground conditions,
  - b.** Removing any installed culverts or temporary bridges,
  - c.** Placing large woody material on the template (where that material is available),
  - d.** Outsloping,
  - e.** Installation of waterbars, or
  - f.** Seeding with a Montana-certified weed free seed mix, as specified.

## **E. Water Resource**

1. Slash, chips, and other woody material resulting from the vegetation treatments will be kept out of stream courses in accordance with Montana Best Management Practices (BMPs) and the Streamside Management Zone (SMZ) law. If material inadvertently enters the stream, it will be removed. All mechanized equipment will be kept a minimum of 50 feet from scoured stream channels and wet, seepy areas to protect water quality and stream bank stability. This “buffer,” which is also required by the above mentioned regulations, will provide filtration for sediment that may be transportable during intense rain events or snow melt.
2. All activities will meet BMP guidelines and SMZs to comply with the State of Montana water quality standards. A site-specific list of BMP practices is included as Exhibit G-12 in the Project File.
3. All culverts will be marked before winter snow, so they can be located and cleared of debris as needed to keep them functioning. This will aid equipment operators from crushing the inlet and outlet of culverts.
4. All wet areas within treatment areas will be clearly marked with flagging and paint before vegetation is treated in any unit so equipment operators know where they are and can avoid them during winter logging or if conditions get wet.

## **F. Fisheries Resource**

1. No mechanized treatment or prescribed burning will take place in Riparian Habitat Conservation Areas (RHCA's). Hand work, including the use of chainsaws, may take place adjacent to structures and administrative sites near Holland Lake and Pierce Lake (such as limbing branches, clearing undergrowth, etc). Work may take place within the road right of way (30 feet each side of center line) to brush and clear roads (FDR #44 and #9558) needed for emergency egress, with no equipment leaving the road in these areas.
2. In the Holland Creek bull trout priority watershed, the RHCAs will be at least the recommended width (from INFISH) or greater. Other watersheds may have minor adjustments up or down based on site-specific needs. All modifications are reviewed in Project File. The following table displays the recommended RHCAs. Detailed maps showing exact limits are in the Project File.

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**TABLE B-1. RECOMMENDED RIPARIAN HABITAT CONSERVATION AREAS**

<b>Fish-bearing Streams</b>	
Swan River, Holland Creek above and below lake, Owl Creek and certain tributaries, Pierce Lake outlet, Beaver Creek, Barber Creek, North Fork Barber Creek, Buck Creek and one of its tributaries, South Fork Rumble Creek, North Fork Rumble Creek	300-foot slope distance from either side of the active stream channel or to the top of the gorge or to the outer edges of 100-year floodplain or outer edges of riparian vegetation or twice the average height of site potential trees, whichever is greatest. Note: 300 feet is usually the greatest width.
<b>Perennial Streams (without fish)</b>	
Inlet to Pierce Lake, unnamed tributary to Beaver Creek, several tributaries to Owl Creek, Holland Creek upstream of waterfall, several unnamed tributaries to Holland Lake, South Fork Barber Creek, several tributaries to Buck Creek	150-foot slope distance from either side of the active stream channel or to the top of the gorge or to the outer edges of 100 year floodplain or outer edges of riparian vegetation or the average height of site-potential trees, whichever is greatest. Note: 150 feet is usually the greatest width.
<b>Intermittent Streams not in Priority Watersheds</b>	
Several unnamed tributaries to Buck and Barber Creek.	50-foot slope distance from either side of the channel, wetland, landslide or landslide-prone area to a distance one half of average height of site-potential tree, whichever is greatest. Note: 50 feet is usually the greatest width.
<b>Intermittent Streams in Priority Watersheds</b>	
Several tributaries to Owl Creek and Holland Creek	100-foot slope distance from either side of the channel, wetland, landslide or landslide-prone area to a distance of average height of site-potential tree, whichever is greatest. Note: 100 feet is usually the greatest width.
<b>Lakes, Ponds and Wetlands Greater than 1 Acre</b>	
Holland Lake, Pierce Lake, wetland in old Barber gravel pit, and numerous unnamed wetlands	150-foot slope distance from the edge of water (ordinary high water mark) or outer edges of riparian vegetation to extent of seasonally saturated soils or extent of moderately or highly unstable areas or distance equal to height of one site-potential tree, whichever is greatest. Note: 150' is usually the greatest width but Pierce Lake has a wide band of riparian vegetation.
<b>Wetlands less than 1 acre</b>	
Numerous unnamed wetlands. Not all are shown on maps and may be discovered during sale prep.	50-foot slope distance from edges of wetland (ordinary high water mark) or outer edges of riparian vegetation or distance of half of a site-potential tree. Note: 50 feet is usually the greatest width.

3. The access road to Unit 26 consists of a poorly designed ford that is a sedimentation source. This ford will be replaced with a culvert prior to haul.

## G. WUI - Vegetation and Hazardous Fuels Reduction Treatments

Mechanized and non-mechanized vegetation treatments methods will be used to reduce the hazardous fuel loading and improve forest health conditions within approximately 1,652 and 107 acres of NFS lands, respectively. The mechanized treatments would include the removal of approximately 3.5 MMBF of forest products. The mechanized vegetation treatments would provide approximately 300 acres (6.7 miles) of DFPZs and approximately 1,460 acres of FRZs on NFS lands that are adjacent to private lands. The non-mechanized vegetation treatments would reduce hazardous fuels on approximately 107 acres of NFS lands adjacent to private lands and along portions of egress routes from private lands holdings.

1. In general, the treatment applied to all areas is a “modified low thinning”, where the objective is to reduce hazardous fuels and tree crown density, while improving residual tree health and growth across the treatment areas. This style of thinning removes trees primarily in the lower tree crown classes or position. That is, overtopped, intermediate, and some codominant trees would be removed. Most dominant and codominant trees would be reserved from cutting.

By definition, tree crown classes or position are defined as follows: 1) Dominant trees have crowns extending above the general level of the crown cover (or canopy) and receiving full light from above and partly from the side. Codominant trees have crowns forming the general level of the crown canopy and receiving full light from above but comparatively little from the sides. Intermediate trees are shorter than the two preceding classes but have crowns extending into the crown canopy formed by codominant and dominant trees, and receiving little direct light from above and none from the sides. Overtopped (or suppressed) trees are entirely below the general level of the crown canopy, receiving no direct light either from above or from the sides.

The “biggest and best” trees would be retained on site as overstory reserved trees.

The biggest and best trees would exhibit, relatively large diameter (i.e., largest diameters currently on-site), good tree form and condition (i.e., straight bole and full crown appearance), and are generally free of insect and disease damage. Species priority would vary by site availability. A mix of the biggest and best species is desired for biological diversity. Focus overall will be on leaving the more vigorous, healthy trees, and the more wind-firm, fire-resistant and longer-lived species.

2. **Defensible Fuel Profile Zone (DFPZ)** – This treatment will provide defensible space on NFS lands adjacent to private property boundaries. The DFPZs will consist of a strip approximately 100 to 500 feet wide, where surface ladder and aerial hazardous forest fuels loading (both live and dead) are reduced. The mature

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tree overstory (trees greater than 30 feet in height) would generally be thinned to a 20 to 40 percent crown closure. In areas where adjacent landowners have done some fire reduction on their lands, or windthrow species such as lodgepole pine are present, residual crown closure will be left at a higher levels (similar to FRZs), since a more intense treatment is not necessary. The immature tree understory (“ladder fuel” trees less than 30 feet in height) would be reduced to less than 50 trees per acre (or about 5 percent of original stocking), and be composed mainly of desirable shade-intolerant species retained in openings, either individually or in clumps. The immature tree understory would be slashed where NOT in clumps and where acting as ladder fuels beneath desirable mature leave trees. Slashing of tall shrubs that do not meet the leave criteria would occur within some areas.

- a. The above description applies to mechanized equipment operating areas.
- b. In hand operation limited areas, only manageable live or dead standing stems less than 5 inches diameter at breast high (DBH) would be treated.

To increase the effectiveness of DFPZs, all snags would be removed to reduce their hazard as potential firebrand sources. Coarse down woody material (>3 inches in diameter) would be reduced (on the average) to less than 5 tons per acre. Fine down woody material (< 3 inches in diameter) would be reduced (on the average) to less than 3 tons per acre.

**Special Treatment Zones (STZs).** In addition, where structures (houses and outbuildings) are located within 100 feet of NFS/private land boundaries, the following additional activities would take place within these STZs. Live limbs on reserved trees would be limbed with a chainsaw up to head height or comfortable, safe reach of the operator. Hazardous existing ground and activity-generated fuels would be removed from the STZ and treated along with other fuels within the general DFPZ. Machine or hand piles would not be created within the STZ for burning, nor would burning of scattered ground fuels take place within this zone.

3. **Within the Fuel Reduction Zone (FRZ),** the mature tree overstory (trees greater than 30 feet in height) would generally be thinned, on average, to a 40 to 60 percent crown closure. This is similar to the DFPZ treatment, except residual tree stocking is heavier in the FRZ, thus the higher crown closure percents. Post-treatment crown closure conditions in several of the proposed FRZs would be 30 to 50 percent when existing crown closures are below 60 percent as a result of blowdown or increasing mountain pine beetle populations.

The immature tree understory (“ladder fuel” trees less than 30 feet in height) would be reduced to less than 100 trees per acre (or about 10 percent of original stocking), and be composed mainly of desirable shade-intolerant species retained in openings, either individually or in clumps.

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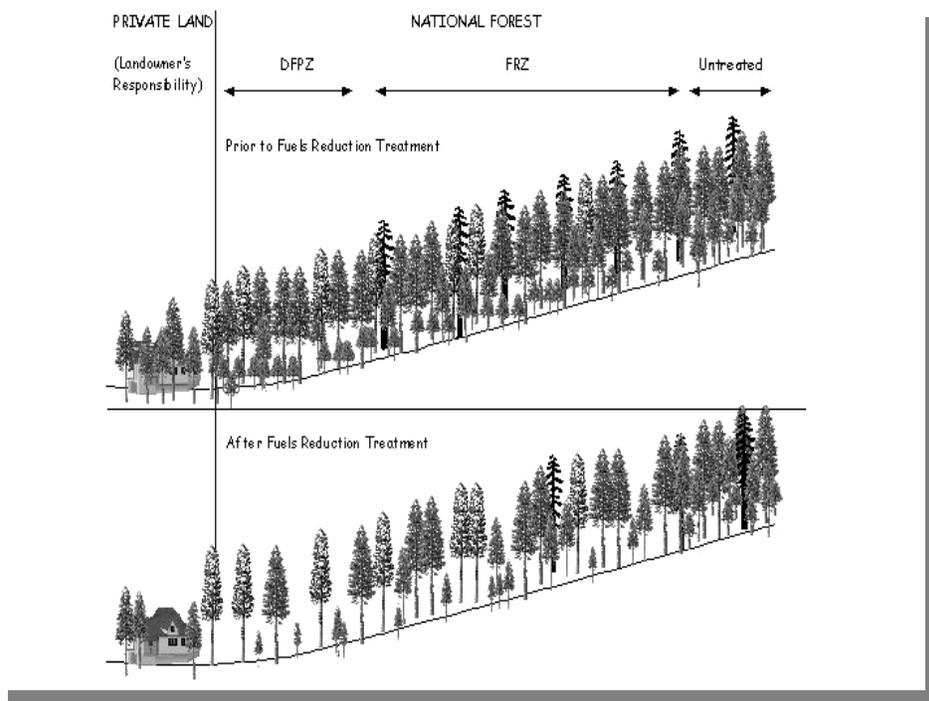
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The immature tree understory would be slashed where NOT in clumps and where acting as ladder fuels beneath desirable mature leave trees. Slashing of tall shrubs that do not meet the leave criteria will occur within some areas.

Suitable snags would be retained at the Forest Plan standards (see wildlife design features on page 12). Since, by prescription, it is desired to leave the largest live tree diameters of suitable species, the Forest Plan standards would be met or exceeded.

To increase the effectiveness of the FRZ, coarse down woody material (> 3 inches in diameter) would be reduced (on the average) to less than 10 tons per acre. Fine down woody material (< 3 inches in diameter) would be reduced (on the average) to less than 5 tons per acre.

The following illustration provides a visual concept of the fuel reduction (DRPZ and FRZ) fuel reduction treatments.



The following tables provide summaries of the mechanized and hand/mechanical treatments. Note that unit numbers are not consecutive; the missing unit numbers indicate units that were dropped from the initial Proposed Action described in the project scoping notices because of natural resources concerns or because of feasibility and/or economic reasons.

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<b>Table B-2<sup>1</sup>. Holland Pierce Fuels Reduction and Forest Health Proposal Mechanized Treatment Matrix Summary of treatment units by treatment acres and management area (MA)</b>				
<b>Unit Number</b>	<b>Treatment Acres</b>			<b>MA<sup>2</sup></b>
	<b>DFPZ</b>	<b>FRZ</b>	<b>Total</b>	
6	--	52	52	13
7	14	28	42	13
8	25	125	150	9 <sup>3</sup>
9	9	61	70	9
11	25	138	163	9
12	15	40	55	9
13	50	49	99	9
16	20	69	89	5
17	--	32	32	9
19	16	--	16	15
20	5	--	5	15
23	24	12	36	15
24	30	58	88	15
24A	25	--	25	5
25	10	44	54	15
27	--	27	27	15
29	23	100	123	5
34	5	30	35	5
35	--	72	72	11C
38	--	26	26	11C
39	--	18	18	11C

<b>Table B-2<sup>1</sup>. Holland Pierce Fuels Reduction and Forest Health Proposal Mechanized Treatment Matrix Summary of treatment units by treatment acres and management area (MA)</b>				
<b>Unit Number</b>	<b>Treatment Acres</b>			<b>MA<sup>2</sup></b>
	<b>DFPZ</b>	<b>FRZ</b>	<b>Total</b>	
25	10	44	54	15
27	--	27	27	15
29	23	100	123	5
34	5	30	35	5
35	--	72	72	11C
38	--	26	26	11C
39	--	18	18	11C
40	--	92	92	11C
42	--	166	166	11C
43	--	81	81	11C
43A	--	36	36	11C
<b>TOTALS</b>	<b>296</b>	<b>1,356</b>	<b>1,652</b>	

1. As discussed in the preceding description of the mechanized fuel treatments, the post-treatment objectives are to achieve, on average, canopy crown closures between 20 to 40 percent within the DFPZs and 40 to 60 percent within the FRZs. It is important to note that the existing (pre-treatment) canopy closure conditions within the proposed treatment are not uniform. For example, within small natural open areas, the existing canopy closure may be 0 percent; and, in contrast, there are areas where the existing canopy closure is at 100 percent. The findings from field observations show that on average, the existing canopy closure within the proposed treatments units ranges from 50 to 70 percent. More detail on the unit specific conditions and prescriptions can be found in the vegetation analysis (Project File Exhibit G-12).

2. Table 1 in the EA provides a summary of Forest Plan MA direction.

3. The Proposed Action analyzes potential fuel treatments within 569 acres within white-tailed deer winter range habitat (MA 9). To comply with Forest Plan direction for the management of white-tailed deer, the implementation of the Proposed Action would not include more than 284 acres of treatment within the areas analyzed for treatment within MA 9. More rationale for this reduction of treatment within MA 9 is contained in the wildlife analysis (Project File Exhibit G-6).

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**TABLE B-3. HOLLAND PIERCE FUELS REDUCTION AND FOREST HEALTH PROPOSAL  
HAND AND/OR MECHANICAL TREATMENTS**  
Summary of treatment units by treatment acres and management area (MA)

UNIT NUMBER	TREATMENT ACRES	MA <sup>1</sup>	TREATMENT DESCRIPTION
44	8	15C	Hand piling and burning and removal of 5-inch understory - within Section 6
45	47	11C	Hand piling and burning and removal of 5-inch understory - Within Sections 10, 11, 14
46	20	15	Hand/ mechanical piling and burning and/or removal of vegetation within specified 'right-of-way' widths along FDR #9558 – to provide egress route (Sections 10, 11)
47	14	15	Hand/ mechanical piling and burning and/or removal of vegetation within specified 'right-of-way' widths along FDR #9558– to provide egress route (Sections 11, 12, 1)
48	4	15	Hand/ mechanical piling and burning and/or removal of vegetation within specified 'right-of-way' widths along FDR #9558– to provide egress route (Sections 1, 2)
49	2	15	Hand/ mechanical piling and burning and/or removal of e vegetation within specified 'right-of-way' widths along FDR #9558– to provide egress route (Sections 2, 35)
50	12	5	Hand/ mechanical piling and burning and/or removal of vegetation within specified 'right-of-way' widths along FDR #44a– to provide egress route (Section 35, 36)
<b>Total</b>	<b>107</b>		

4. Low density inter-planting (approximately 50 trees or shrubs per acre) of a native mix of tree seedlings or shrubs would be planted in disturbed ground areas or other openings created by harvest operations, as conditions warrant. The purpose is to revegetate disturbed sites and maintain site productivity. This work is not required for project mitigation, but would be a beneficial project enhancement.

**5. Prescribed Burning.**

- a. Burn plans would be prepared for all prescribed burning activities. All burning would comply with the Smoke Management Plan prepared by the Montana Air Quality Bureau and administered by the Montana State Airshed Group, and fuel treatments will comply with the Montana State Law, Sections 76-13-401 through 76-13-414 MCA.
- b. Prescribed understory burning, jackpot burning, and pile burning would be methods employed to reduce slash and fuel loadings within mechanized and non-mechanized treatment areas, in addition to other mechanical methods of fuels treatment previously described.

<sup>1</sup> Table 1 of the EA provides a summary of Forest Plan MA direction.



- c. Fuelbreaks, used to control prescribed burning operations, may be constructed using mechanized equipment for cutting and piling, or by using hand labor for chainsaw cutting and piling, depending on site conditions and access limitations.

## **H. Sensitive or Threatened Plants**

1. Sensitive plant surveys were completed during the 2005 field season. The implementation of the Holland Pierce Fuels Reduction Project will follow guidelines established in the sensitive plant analysis (Project File Exhibit G-13) to protect any plants found during survey..
2. If sensitive or threatened plant species were discovered during activities, contractual requirements provide for modification of the contract to avoid impacts and protect their habitat.
3. In accordance with Forest Plan Amendment 20 (Conservation Measures for the Threatened Plant, Water Howellia) and the Conservation Strategy for *Howellia aquatilis*, wet areas identified as “potential howellia habitat” within the treatment units would be protected by:
  - a. Establishing a 300-foot buffer around occupied howellia ponds, where no ground disturbance would occur, regardless of activity. The 300-foot buffer begins where facultative wet plants persist.
  - b. Establishment of a buffer zone for potentially occupied howellia ponds from 150 feet out to 300 feet from the wet area, where only dead trees would be harvested. All live trees would be retained on site; and salvage harvest activities would only occur on frozen ground or when there is more than 10 inches of snow cover on the ground (Project File Exhibit G-13). If sensitive or threatened plant species were to be discovered during activities, steps would be taken to minimize impact and protect their habitat.
4. All ground-disturbing activities will avoid wetlands, including lakes, ponds, marshes, fens, and streams. Buffers around wetlands will be 150 feet for areas greater than 1 acre and 50 feet for areas less than 1 acre. Buffers should begin where wetland plants (facultative wet) end.

## **I. Noxious Weeds**

1. All contractors and others implementing the project to comply with the following project design criteria:
  - a. Where possible, smaller slash piles will be favored over very large ones, because of concerns for the effects on the soil under these piles with burning;

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- b. Equipment use associated with fuels reduction treatments and temporary road construction (excluding pickups and trucks used to remove forest products) will be power scrubbed or steam cleaned on the undercarriage and chassis before transport to the Project Area.
- c. Skid trails, landings, burn piles, temporary roads, and roadsides with soil disturbance will be seeded with a Montana-certified grass ground cover (seed mix of native plants and non-native annual will be specified by the Forest Botanist) as soon as practicable after disturbance to provide for site protection until native species are established. During construction of temporary roads, the topsoil (A Horizon) will be left to the side and replaced on the temporary road when use of the temporary road is no longer needed for the project. Seeding of temporary roads will occur after topsoil is replaced.
- d. In all treated areas and other disturbed ground (such as constructed temporary roads and log landings) and along all system roads used to transport forest products, annual surveys will be conducted following disturbance and while the sale is active, and for two years following sale closure to determine any invasion of noxious weeds. Should weeds be discovered, treatment will be consistent with the strategy outlined in the NIWC EA (Project File Exhibit H-8).
- e. Spraying of weeds along designated Forest roads will be conducted by the stewardship contractor. Existing roads and their associated right-of-ways within the project boundary identified for noxious weed treatment are listed in Table B-4. The Flathead National Forest will work with Missoula County for weed maintenance on County roads. Road right-of-ways are defined as 33 feet from centerline on each side of the road. However, when a contiguous patch of weeds extends beyond 33 feet from the road, it shall be treated. Spraying of an appropriate herbicide will occur once in the spring before flowers bloom. Herbicides shall be applied over 3 consecutive years, once each spring, as described above and in the manufacturer's recommended quantity. The total amount of noxious weed spraying within the project area is dependent on the value received from the harvest of forest products associated with the fuel reduction treatments.
- f. Treatment of invasive plants will be consistent with the strategy outlined in the NIWC EA (March 2001).

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**TABLE B-4. MILES OF ROADS WITHIN THE HOLLAND PIERCE FUELS REDUCTION AND FOREST HEALTH PROJECT DESIGNATED FOR WEED ABATEMENT**

905 Barber Creek	0.79	10572 Big Pine	0.56
9540 Lower Buck Cr.	0.57	10718 Holland Sewage Lagoon	0.09
9542 Middle Barber Cr.	1.11	41538 0.31	0.31
9543 Lower Barber Cr.	0.82	5017	1.15
9545 Buck Creek	5.00	90284	0.29
10563 Barber Pit	0.47	1030 Pierce Lake	1.99
44 Holland Lake	1.31	1030A Pierce Lake West	0.39
9558 Owl Cr. Loop	4.09	9569 Upper Pierce Lake	1.12
9561 Upper Owl	0.55	10560 Owl Headwaters	0.07
10121 Hopkins	0.09	Temporary Roads	3.80
10121A Holland Packer Camp	0.40	Roadways closed to vehicle travel	4.10
10561 Holland Boot	0.93	<b>TOTAL</b>	<b>Up to 30.00 miles</b>

## J. Wildlife

1. The contract will include provisions to cease activity or otherwise protect populations and individuals of threatened, endangered, or sensitive species. This allows for modification of the project, should an unforeseen issue(s) be identified during operations.
2. Within FRZ treatment units, Forest Plan snag management guidelines will be met for maintaining a density of snags of at least 6 snags average per acre between 12 and 20 inches DBH and 2 snags >20 inches DBH. If snags are not available at this density, then 5 live replacement trees per acre greater than 12 inches DBH will be retained for snag recruitment.
  - a. To avoid potential disturbance of spring grizzly bear in important spring habitat, fuel reduction treatments will not occur from April 1 through June 15.

- b. Public access will be restricted on roads normally closed to use and on temporary roads. Contractors working under contract will be prohibited from carrying firearms while on duty.
- c. All temporary roads constructed on NFS lands will be reclaimed after use.
- d. Fuel reduction treatments will be designed to meet Forest Plan standards for MA 9, winter habitat for white-tailed deer. The MA 9 standards include “achieve at least 50 percent of the area in winter thermal cover.”

#### **K. Scenic (Visuals)**

All landings will be rehabilitated to natural appearing landscape. Rehabilitation would include slash and debris disposal, re-contouring, where necessary, and re-vegetated.

#### **L. Heritage Resources**

- a. Heritage resource surveys were conducted during the 2005 field season; none were found.
- b. If cultural resources are discovered during ground disturbing activities, contractual requirements provide for protection of heritage resources and modification of the contract to avoid impacts to heritage resources.

#### **M. Recreation / Scenic Values**

- a. Fuel reduction treatment activities will be coordinated to minimize the period of trail closures.
- b. The project design and layout will protect recreation trailhead facilities, trails structures, and other improvements (trail tread). Disturbance or impacts to these features will be restored to their pre-activity condition.
- c. Activities will not occur within or adjacent to the Holland Lake Campground and Lodge Recreation Complex from May 1 thru September 30.
- d. All landings will be rehabilitated to a near-natural appearing landscape. Rehabilitation will include slash and debris disposal, re-contouring (where necessary), and re-vegetation. Where practicable, use of forwarding equipment will be encouraged to reduce visual impacts. Recontouring, if necessary, can be required when approving landing locations.
- e. Disposal of down woody material adjacent to recreation facilities and/or sites will be in areas agreed upon by the District Resource Forester.

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## II. Monitoring Activities

The following monitoring matrix describes monitoring associated with the proposed action and summarizes the purpose, methods, and expected results and uses of the proposed monitoring activities. The Forest Service is currently seeking opportunities for multi-party monitoring of post treatment conditions.

**TABLE B-4. SUMMARY OF MONITORING ACTIVITIES**

WHAT	WHERE	WHEN / DURATION	WHY	WHO	EXPECTED RESULTS AND USE
<b>WILDLIFE</b>					
Monitor DFPZs and FRZs to determine if ATV use increases as a result of opening up the timber stands.	DFPZs and FRZs that are easily accessible	Following fuel reduction implementation	To see if the area is receiving increased human disturbance	Wildlife Biologist	The information will be used to determine if grizzly bear security has decreased in the area and to ascertain if mitigation is needed
Monitor DFPZs and FRZs to determine if snowmobile use increases as a result of opening up the timber stands	DFPZs and FRZs that are easily accessible	Following fuel reduction implementation	To see if the area is receiving increased human disturbance	Wildlife Biologist	The information will be used to determine if security for Canada lynx has decreased in the area and to ascertain if mitigation is needed.
<b>FOREST ROADS</b>					
Monitor and oversee temporary road construction.	Temporary roads.	Throughout duration of project implementation.	Insure road construction activities comply with contract specifications.	Contracting Officer, Forest Service Representative, and/or Timber Sale Administrator.	Routinely determine compliance with contract specifications.
Monitor and oversee condition of permanent roads	Permanent roads	Throughout duration of project implementation	Insure activities are not negatively affecting road condition and adjoining resources	Contracting Officer's Representative, Engineering Representative, and/or Timber Sale Administrator	Routinely determine road integrity and BMP compliance
<b>SOIL QUALITY</b>					
Monitor the amount of detrimental soil disturbance	Within activity areas (fuel reduction zones and defensible fuel profile zones)	After all phases of the project are implemented	Determine if the design features are effective at maintaining soil productivity	Forest Soil Scientist or representative	Result: The percent of the activity area with detrimental soil disturbance. Use: Refine design features and determine the need for restoration activities.
<b>FOREST VEGETATION</b>					

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**TABLE B-4. SUMMARY OF MONITORING ACTIVITIES**

WHAT	WHERE	WHEN / DURATION	WHY	WHO	EXPECTED RESULTS AND USE
Pre contract (work) review. Review contract.	All treatment units.	Prior to implementation.	Insure treatment activities comply with the NEPA decision.	IDT Members, Line Officer, Contracting Officer's Representative, and/or Timber Sale Administrator.	Assure project implementation complies with the NEPA decision.
Monitor and oversee vegetation treatments (commercial and noncommercial).	All treatment units.	Throughout duration of project implementation.	Insure treatment activities comply with contract specifications.	Contracting Officer's Representative and/or Timber Sale Administrator.	Determine / assure compliance with contract specifications.
Conduct post treatment surveys. Monitor the changes in cover, structure, insect, and disease components.	All treatment units.	Third year after treatment	Determine how well treatment objectives were met and to gather data as needed for possible follow-up treatment.	Silviculturist or designated representative	Determine the effectiveness of the treatments. This information will be used in making future recommendations for similar fuel reduction projects
Monitor and oversee vegetation treatments (commercial / pre-commercial thinning, and slash disposal.	All treatment units.	Throughout duration of project implementation.	Insure treatments activities comply with contract specifications.	Contracting Officer's Representative and/or Timber Sale Administrator.	Determine / assure compliance with contract specifications.
<b>FOREST VEGETATION AND FUELS</b>					
Conduct pre-treatment sampling prior to implementation	Selected treatment units.	Prior to implementation	Establish existing conditions in proposed treatment units.	Fuels Manager or designated representative	Establish baseline for fuels treatment proposals.
Conduct post treatment surveys. Monitor the reduction in fuel loads, including changes in canopy cover, structure, ladder fuels, and down woody material.	All treatment units.	First year after treatment.	Determine how well treatment objectives were met and to gather data as needed for possible follow-up treatment	Silviculturist and Fuels Manager or designated representative.	Determine the effectiveness of the treatments. This information will be used in making future recommendations for similar fuel reduction projects.
Conduct post treatment surveys. Monitor the reduction in fuel loads, including changes in canopy structure and ladder fuels.	All DFPZ treatment units.	First year after treatment; then every 10-years.	Determine how well treatment objectives were met and to gather data as needed for possible follow-up treatment.	Fuels Manager or designated representative.	Determine the effectiveness of the treatments. This information will be used in making possible future follow-up treatments

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**TABLE B-4. SUMMARY OF MONITORING ACTIVITIES**

<b>WHAT</b>	<b>WHERE</b>	<b>WHEN / DURATION</b>	<b>WHY</b>	<b>WHO</b>	<b>EXPECTED RESULTS AND USE</b>
<b>BOTANY</b>					
Monitor for Howell's gumweed	EO #01	For a 5 year period following implementation of the project	Monitor weed establishment	Forest Botany personnel	Determine if potential weed establishment threatens continue existence of Howell's gumweed at EO #01
<b>WATER QUALITY</b>					
Establish and monitor permanent sites and photo points to survey and document stream channel stability (i.e. Pfankuch surveys).	Selected streams within the proposed vegetation treatment units and control site(s).	Every 5 years	Document trends	Trained personnel	Continue to confirm predictions of model results and detect unacceptable changes should they occur
<b>INVASIVE PLANTS</b>					
Monitor the presence and spread of noxious weeds.	All (ground Disturbed areas) treatment units and lands affected by activities; slash pile burns; and all existing and temporary system roads used for the project.	Annually, starting at year one through 3 years following harvest / haul activities.	To determine the presence and/or spread of noxious weeds and needed containment or eradication measures, and to future direct treatment activities.	Botanist, Noxious Weed Specialist, or Weed Crew	Determine recovery rates of native plants in harvested units; determine if weed control measures should be considered.
<b>FISHERIES</b>					
Monitor effectiveness of fish passage through culverts	At one selected, new culvert. Final selection depends on which culverts get funded	Est. new, permanent fish population monitoring reach above selected culvert. Electrofish reach once every 3 years to determine long-term trend. Also, install a 2-way fish trap above culvert and monitor daily for 1 week prior to project and 2 weekends post project.	Determine fish migration patterns through the culvert and long-term population changes as a result of new passage.	District fisheries biologist and technicians	Verify culvert design adequately passes fish. Use lessons to design future culvert passage projects. Help build monitoring database of long-term population trends.

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**TABLE B-4. SUMMARY OF MONITORING ACTIVITIES**

<b>WHAT</b>	<b>WHERE</b>	<b>WHEN / DURATION</b>	<b>WHY</b>	<b>WHO</b>	<b>EXPECTED RESULTS AND USE</b>
Monitor cattle use of Units 4 and 5 and their impact to Buck Creek	Units 4 and 5 and along 2 sections of Buck Creek on NFS lands in Section 16	A single effort, 3 years after units are implemented. Assess cattle use and conduct two separate 500 foot stream bank stability measurements. If cattle use is insignificant, cease monitoring. If use is significant, develop mitigation measures and new monitoring plan.	Determine if cattle in range allotment begin to impact Buck Creek and recommend mitigation measures as needed.	Range Technician	Expected brief report on cattle use and distribution in Units 4 and 5. Expected stream bank stability data in Buck Creek. Following report, the District can determine there is no impact and cease monitoring or determine that further work is warranted. Possible mitigation measures may be temporary fence near Buck Creek.

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## APPENDIX C

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### Public Comments

on the  
Holland Pierce Fuels Reduction and Forest Health Project

This Appendix includes responses to comments received during the scoping period for the Holland Pierce Fuels Reduction and Forest Health Proposal. The comments received during the scoping of this project are included in Section C of the Project File.

Fourty-two comments or letters were received during the scoping period for this proposal, which concluded on July 29, 2005 (Project File Section C). The issues and concerns presented in the comment letters are summarized and paraphrased into the following categories:

	<b>Category</b>	<b>Page</b>
A	Soils	<b>C-2</b>
B	Water (Hydrology)	<b>C-3</b>
C	Fisheries	<b>C-6</b>
D	Forest Vegetation	<b>C-7</b>
E	Threatened, Endangered, Sensitive Plants	<b>C-8</b>
F	Noxious Weeds	<b>C-9</b>
G	Threatened & Endangered Wildlife Species	<b>C-10</b>
H	Sensitive Wildlife Species & Management Indicator Species	<b>C-12</b>
I	Wildlife, Old Growth Associates	<b>C-13</b>
J	Wildlife, General	<b>C-14</b>
L	Fuels Management	<b>C-15</b>
M	Road Management	<b>C-20</b>
N	Cumulative Effects	<b>C-21</b>
<b>O</b>	<b>Analysis Process</b>	<b>C-22</b>

## **A. Soils**

### **Concern / Issue # 1:**

Heavy equipment use associated with this proposal would accelerate soil erosion, increase soil compaction, and degrade soil productivity.

### **Response:**

The project Soil Scientist made on-site evaluations of the proposed treatment units to determine soil conditions and to quantify existing detrimental soil disturbance within the activity areas (proposed treatment units) (Project File Exhibit G-2). The Interdisciplinary Team (ID Team) developed Project Design Features to protect the soil resource and minimize impact on soil productivity. These design features include timing and operations restrictions, the reclamation of temporary roads, skid trails, and landings, as well as other features to protect the soil resource (Appendix B, pages 2 and 3). The effects of the alternatives on the soil resource are disclosed in the EA (pages 19-20) and in the soil scientist's special report (Project File Exhibit G-2). The net result of these features is that soil erosion due to the effects of the project would be minimal and compaction and soil productivity loss would be well within accepted standards.

### **Concern / Issue # 2:**

Are the threshold levels for soil compaction adequate for maintaining soil productivity adequate? Is allowing 15 percent of an area to be impaired appropriate to meet planning goals?

### **Response:**

The soil analysis followed Regional guidelines for soil analysis as specified in FSM 2500-99-1. The subject of allowing detrimental soil disturbance on up to 15 percent of an activity area is discussed frequently. This issue is discussed in detail in the soil scientist's report (Project File, Exhibit G-2). Until such time that ongoing research better defines acceptable limits of soil detrimental disturbance, this is a reasonable, acceptable amount. Powers and others (1990) describe the use of a 15 percent as being the lowest magnitude of change detectable given current monitoring technology. It is possible to measure the aerial extent of detrimental soil disturbance across an activity area. It is reasonable to assume that by maintaining at least 85 percent of an activity area in undisturbed or minimally disturbed, non-detrimental disturbance conditions we are maintaining soil quality.

### **Concern / Issue # 3:**

Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion.

**Response:**

Project design features included measures to minimize the introduction and/or spread of noxious weeds within the Project Area. Weed abatement design features include the spraying of weeds along up to 30 miles of designated NFS roads, the application of a seed mix on disturbed sites such as temporary roads, skid trails and landings, and the requirement for equipment to steam cleaned before transport to the project area (EA, Appendix B, pages 11 and 12). As mentioned in the response to the concern / issue #1 above, the ID Team has developed Project Design Features to protect the soil resource and minimize impact on soil productivity (EA, Appendix B, pages 2 and 3).

**Concern / Issue # 4:**

In an attempt to avoid soil disturbances associated with the proposed mechanical treatments, one respondent suggested that an alternative should be developed that would use restoration practices that would not require heavy machinery and commercial logging.

It was also suggested that consideration should be given to an alternative that would use prescribed fire in lieu of mechanical treatments.

**Response:**

These two recommended alternatives were evaluated by the ID Team and Responsible Official, but were not considered in detail for the reasons described in the EA (page 11).

**Concern / Issue # 5:**

Please disclose what inventory or monitoring information of soil functioning indicators the Forest has, including lichens, fungi, insects, etc. since these can and do define existing and probable future forest conditions, especially related to natural recovery following fire.

**Response:**

The Forest does not use lichens, fungi, or soil microbes as an indicator of soil productivity. It does use monitoring that more easily reflects the physical condition of the soils. The existing condition of the soils in the Holland Pierce area and other relevant monitoring information can be found in the Project File Exhibit G-2.

**B. Water (Hydrology)**

**Concern / Issue #1:**

No logging should take place within 300 feet of streams, wetlands, or ponds.

**Response:**

Design features associated with the Proposed Action provide protection of streams, wetlands, and ponds. The proposed treatments have been designed to meet Riparian Habitat Conservation Areas guidelines as established by INFISH (EA, Appendix B); in accordance with the Forest Plan and the Conservation Strategy of *Howellia aquatilis*, wet areas identified as “occupied or potential howellia habitat will be protected (EA, Appendix B); and, all ground-disturbing activities will avoid wetlands including lakes, ponds, marshes, fens, and streams (EA, Appendix B).

**Concern / Issue # 2:**

Logging, thinning, and fire suppression can have harmful effects on watersheds.

We request a careful analysis of the impacts to water quality and fisheries, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events and increases in stream water temperature.

It is extremely important that the FS disclose the environmental baseline for watersheds. The FS is badly misplacing the threats to clean water onto vegetative conditions instead of correctly identifying the true threats to watershed health.

**Response:**

The ID Team considered the potential impacts on water quality. The Project Hydrologist has made on-site evaluation of the proposed treatment units to determine existing conditions for the water resource (Project File Exhibit G-3). The ID Team has developed Project Design Features to protect the water resource and minimize impacts on water quality (EA, Appendix B, pages B-3 and B-4). The effects of implementing this proposal on water quality have been analyzed and disclosed (EA, pages 20-21; Project File Exhibit G-3). In addition, the ID Team has developed Project Design Features to minimize impacts on the fisheries resource (Appendix B, pages B-4 and B-5). The effects of implementing this proposal on the fisheries resource have been analyzed and disclosed (EA, pages 22-23; Project File Exhibit G-7).

**Concern / Issue # 3:**

Building roads, even temporary ones across the wet areas and streams will have significant effects on the watershed.

Swan Lake is a Water Quality Limited Segment (WQLS) on the state's 303(d) list. A Water Quality Protection Plan and Total Maximum Daily Load has recently been completed for the Swan watershed to limit sediment and nutrients from further degrading impaired water bodies. Temporary road construction, especially if the roads cross streams, has the potential to cause additional loading to WQLS.

**Response:**

The project Hydrologist has made on-site evaluations of the proposed treatment units to determine water quality conditions (Project File Exhibit G-3).

The Montana Department of Environmental Quality has completed a TMDL for Swan Lake Watershed. No streams within the analysis area are on the 303(d) list. A sediment source survey associated with the development of the Swan Lake Watershed TMDL identified 65 sites on NFS lands within the Holland Pierce project that were potential sediment sources. Based on additional field reviews, 19 of these 65 sites were identified as contributing sediment.

Five of these sediment sources will be eliminated with the implementation of Holland Pierce Fuels Reduction and Forest Health proposal. The remaining 12 sites are located on roads not associated with the Holland Pierce proposal and will be addressed as funding is made available (Project File Exhibit H-17). The Swan TMDL is incorporated by reference in the Project File as Exhibit H-24. All sediment sources that were identified through on-the-ground surveys are included and prioritized in the supporting documentation for the TMDL, and a Technical Advisory Committee (TAG) is finding grants and other methods to remedy sediment sources whether they are in a “listed” stream or not. As stated in Project File Exhibit G-3, no streams within the analysis area are on the 303d list, and the project would eliminate some of these existing sources, leading to improvements in this regard over the existing condition. For these reasons it is felt that water quality protection and TMDL objectives for the Swan Lake watershed will not be adversely affected by this project. .

In addition, the Interdisciplinary Team (ID Team) has developed Project Design Features to protect the water resource and minimize impact on water quality (EA, Appendix B, pages B-3 and B-4). These design features include timing and operations restrictions, the reclamation of temporary roads, skid trails, and landings, as well as other features to protect the soil resource (Appendix B, pages 20-21). The effects of the alternatives on the water resource are disclosed in the EA (pages 20-21 and in the hydrologist’s specialist report (Project File Exhibit G-3).

The Proposed Action includes the construction and subsequent reclamation of approximately 3.8 miles of temporary road needed to access the proposed treatment units. The proposed temporary road locations do not require any stream crossings. The ID Team has developed project design features to minimize the environmental impacts of the temporary road construction (EA, Appendix B). The impacts of the temporary roads are analyzed and their effects disclosed by resource area in the EA (pages 19-39; and in the Project File Section G).

***Concern / Issue # 4:***

Where livestock are permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, streambank stability and subsequent sedimentation.

***Response:***

The Forest Service currently is administrating two grazing allotments (Holland and Barber Creek Allotments) within the Holland Pierce Fuels Reduction and Forest Health Project Area. The terms and conditions of the grazing allotment special use permits include the monitoring of impacts of grazing on forest vegetation, streambank stability, and soil compaction which has been ongoing. The special use permits require the application of mitigation measures, should unacceptable or adverse impacts are present. The ID Team considered the impacts of grazing on streambank stability and soil compaction (EA, page 38, Project File Exhibit H-19). Monitoring of allotments has found very limited impact from grazing on streambank stability, and that the limited grazing which occurs has not led to significant soil compaction. This information is disclosed in more detail in the South Swan Grazing Allotments EA (Project File Exhibit H-19).

**Concern / Issue # 5:**

There are existing sediment problems on roads within the project area that need to be fixed to eliminate erosion.

**Response:**

The development of this project included conducting road logs within the project area to identify sediment sources associated with NFS roads. Design features for the action alternative include application of road Best Management Practices (BMPs) (Project File Exhibit H-17) to eliminate sediment sources and improve drainage. The BMP work would be completed prior to any log hauling, and left in proper functioning condition when the project is completed (EA, Appendix B, page B-1).

**C. Fisheries**

**Concern / Issue # 1:**

The real risk to fisheries is not the direct effects of fire itself, but rather the existing condition of our watersheds, fish communities, and stream networks, and the impacts we impart as a result of fighting fires. Therefore, attempting to reduce fire risk as a way to reduce risks to native fish populations is really subverting the issue. If we are sincere about wanting to reduce risks to fisheries associated with future fires, we ought to be removing barriers, reducing road densities, reducing exotic fish populations, and re-assessing how we fight fires. At the same time, we should recognize the vital role that fires play in stream systems, and attempt to get to a point where we can let fire play a more natural role in these ecosystems.

Our goals for the area include fully functioning stream ecosystems that include healthy, resilient populations of native trout. The highest priority management actions in the project area are those that remove impediments to natural recovery. We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention.

**Response:**

This statement suggests that we have inferred that fuels treatments in this area is being proposed as a way to reduce risks to native fish. The purpose and need for this proposal (EA, page 4) does not make any such statement. However, the proposal does include design features to protect and improve fisheries habitat (EA, Appendix B, pages B-4 and B-5).

**Concern / Issue # 2:**

Fisheries habitat within the project area may be vulnerable to cumulative effects of the proposed management actions and the foreseeable prescribed burning.

***Response:***

The ID Team considered the potential impacts on fisheries habitat. The Project Fisheries Biologist has made on-site evaluations of the proposed treatment units to determine existing conditions (Project File Exhibit G-7). The ID Team has developed Project Design Features to minimize impacts on the fisheries resource (EA, Appendix B, pages B-4 and B-5). The cumulative effects of the alternatives on the fisheries resource are disclosed in the EA (page 27) and a detailed analysis of the effects is included in Exhibit G-7 of the Project File. The Project Fisheries Biologist has prepared a BA and BE for the fisheries resource (Exhibits G-8 and G-9, respectively of the Project File and concludes that the project is not likely to adversely affect bull trout, and would not lead to a trend for federal listing on native cutthroat trout.

***D. Forest Vegetation***

***Concern / Issue # 1:***

Silvicultural prescriptions - thinning in the Fuel Reduction Zone should include a diameter tree limit, so larger trees are retained on the landscape and the small trees that are the ladder fuels are reduced. This project should NOT be designed to generate wood products but truly be to reduce fine fuels near private property. If small diameter wood products happen to be a by-product, fine, but it should not be the basis of the project.

***Response:***

The fuel reduction treatments are designed to retain on-site the “biggest and best” trees; and, most of the dominant and co-dominant trees would be reserved from cutting (EA, page 26; Appendix B, pages B-5 and B-6). The primary prescription is a thinning from below, which tends to target smaller trees in the stand. The purpose and need for this proposal does not include the generation of wood products; however, the tree thinning associated with the fuel reduction treatments would generate approximately 3.5 million board feet of commercial forest products which will help finance the non-commercial treatment areas.

***Concern / Issue # 2:***

Lodgepole pine is particularly subject to blowdown, once thinned.

In the mostly old lodgepole stands, create small openings to help regenerate lodgepole and larch (if present).

***Response:***

It is recognized that the open canopy/open grown forest condition that is targeted for lodgepole pine stands is not a common, “natural” condition in these forest types. To minimize the potential for post-treatment blowdown, the project Silviculturist developed stand diagnoses for lodgepole pine stands that feature ‘light thinning treatments,’ where the spacing between the remaining trees would be approximately 15 to 20 feet. In addition, the stand diagnoses for a portion of the lodgepole pine stands includes creating small openings, which would also minimize the potential for of post-treatment blowdown (Project File Exhibit G-12). The overall prescription in lodgepole areas, whether addressed by thinning or small openings combined with thinning is to retain a high proportion of the existing stand in place.

***Concern / Issue # 3:***

The FS often makes a case for logging as a way to reduce insect and disease damage to timber stands. As far as we are aware, the FS has no empirical evidence to indicate its “treatments” for “forest health” decrease, rather than increase, the incidence of insects and diseases in the forest. Please consider the large body of research that indicates logging, roads, and other human caused disturbance promote the spread of tree diseases and insect infestation.

***Response:***

The analysis considers the effects of insect and disease on the forest vegetation resource from the implementation of the Proposed Action. This analysis concludes “that the thinning treatments would reduce competition between trees, increasing availability of light and moisture to the remaining trees, which would improve vigor and growth of the leave trees” and that “the increased tree vigor would also increase their ability to withstand future insect and disease influences.” (EA, pages 33; Project File, Exhibit G-12).

***E. Threatened, Endangered, Sensitive Plants***

***Concern / Issue #1:***

The Proposed Action could impact threatened, endangered plants, and sensitive plants.

The project needs to avoid areas that contain rare and sensitive plants. The entire project area should be surveyed prior to any activities that may affect sensitive or rare plants to ensure that they are not impacted.

***Response:***

Plant surveys within the Project Area were conducted during the 2005 field season (Project File Exhibit G-13). Findings from these surveys include the identification of 9 occupied and 3 potential water howellia locations and 8 locations where populations of sensitive plants occur. The ID Team has developed project design features to protect water howellia habitat (Appendix B, pages B9 - B10).

A BA for threatened plant species and a BE for sensitive plants has been prepared for this project (Project File Exhibits G-16 and G-13, respectively). The EA discloses the effects of the alternatives on threatened, endangered, and sensitive plants species (EA, pages 35-36).

Through the implementation of project design features, the Proposed Action complies with ESA and Forest Plan direction for federally listed plants (EA, page 35). The project includes post-treatment sensitive plant monitoring (EA, Appendix B).

## ***F. Noxious Weeds***

### ***Concern / Issue # 1:***

The project needs to be done in a manner that does not spread noxious weeds.

### ***Response:***

The EA discloses the effects of the alternatives with respect to the introduction and/or spread of noxious and invasive weeds (EA, pages 37-38). The Proposed Action includes design features to minimize the risk of the spread of weeds (EA, Appendix B, pages B10 – B11). The project includes post-treatment surveys and treatment for noxious weeds. (EA, Appendix B).

### ***Concern / Issue # 2:***

The weeds need to be sprayed.

One of the biggest problems with the FS's failure to deal forthrightly with the noxious weed problem on a forestwide basis is that the long-term costs are never adequately disclosed or analyzed.

### ***Response:***

Design features for the proposed action include the spraying of noxious weed spraying along up to 30 miles of NFS roads within the project area. The project includes post-treatment surveys for noxious weeds. (EA, Appendix B, page B-11). The treatment on noxious weeds will be consistent with the strategy outlined in the Flathead National Forest NIWC EA (EA, Appendix B, pages B10 – B11). To-date, the 2005 Forest Weed Control (spraying) Program accomplishments includes 80 acres of weed spraying along road in the Holland Pierce project area; other areas in the project area that were treated included the Holland Lake Campground and Day Use Area, Owl Packer Trailhead, and the Owl Creek Helispot.

## **G. Threatened & Endangered Wildlife Species**

### **GRIZZLY BEAR**

#### **Concern / Issue # 1:**

There is a potential for fuel reduction activities, during sale prep and during actual project implementation, to decrease grizzly bear security and increase mortality risk for the bear. It is important to maintain adequate security levels and mortality risk to aid in recovering the grizzly bear.

Fuel reduction activities will probably affect, at least minimally, the amount and distribution of hiding cover, thermal cover, and forage, relative to the grizzly bear. It is important that the Holland Pierce landscape maintain the habitat capability of supporting a recovered grizzly bear population.

#### **Response:**

The effects of the action alternative on grizzly bear mortality and security are disclosed on pages 25-26 of the EA; the Project Wildlife Biologist's specialist report provides additional information and detail (Project File Exhibit G-17).

Sources for human-caused mortality for grizzly bears in the NCDE include human food/livestock, trains/autos, illegal deaths, self defense and bears removed due to human fatalities. The majority of these deaths occur in a roaded rural situation with a few deaths occurring on FS roaded or away-from-road areas (NCDE 2004 meeting - USFWS grizzly bear recovery) and deaths are not attributed to timber or salvage operations.

A BA for grizzly bear has been prepared for this project, which concludes with a “may effect, not likely to adversely affect” determination for grizzly bear (Project File Exhibit G-1).

Throughout project planning, habitat maintenance and improvement for grizzly bear, and conflict minimization, were the highest management priorities. This is evidenced in the project design features, which include timing restrictions, operations restrictions, reclamation of temporary roads, and post-treatment monitoring of ATV and snowmobile use in the area to determine if there is increased human disturbance as a result of opening up of the treated areas (EA, Appendix B, pages B-11, B-12, B-14).

The Proposed Action is consistent with the Swan Valley Grizzly Bear Conservation Agreement (SVGBCA) (Project File, Exhibit H-25).

The analysis for this proposal includes the ‘Effects at Forest and Regional Scales – Compatibility with NFMA Requirement for Maintaining Species Viability’, which includes the grizzly bear (Project File Exhibit H-23).

## **CANADA LYNX**

### **Concern / Issue # 1:**

There is a potential for fuel reduction activities to decrease forage and denning habitat values for the Canada lynx. There may also be the potential for fuel reduction activities to increase human use in important lynx habitat. If this happens, security levels for lynx could be decreased and the mortality risk for Canada lynx could be increased. It is important that habitat values for the lynx, including forage, denning, and security, be maintained.

### **Concern / Issue # 2:**

Snowshoe hare habitat must be retained for lynx foraging.

### **Response:**

The proposal does not include fuels reduction treatments within lynx foraging habitat. The EA includes an analysis and disclosure of the effects of the Proposed Action on the Canada lynx (EA, pages 26-27); the Project Wildlife Biologist's Specialists Report provide a detailed description of the effects analysis for the lynx, which includes the potential impacts to lynx foraging habitat. The conservation measures, including standards and guidelines, outlined in the LCAS have been followed throughout the development of the Holland Pierce Fuels Reduction and Forest Health proposal (EA, page 27, Project File Exhibit G-1).

A BA for the Canada lynx has been prepared for this project, which concludes with a "may effect, not likely to adversely affect" determination (Project File Exhibit G-1).

The analysis for this proposal includes the 'Effects at Forest and Regional Scales – Compatibility with NFMA Requirement for Maintaining Species Viability', which includes the Canada lynx (Project File Exhibit H-23).

## **THREATENED and ENDANGERED / SENSITIVE / MIS SPECIES GENERAL**

### **Concern / Issue # 1:**

Any impacts to threatened, endangered and sensitive species and their habitat must be analyzed and mitigated. Due to the presence of T&E species an EIS should be prepared.

### **Concern / Issue # 2:**

The FS must disclose if the project area is within the range of any threatened, endangered, proposed, sensitive, or management indicator species and how those species may use the specific areas now proposed for "treatment."

***Response:***

There are four terrestrial threatened and endangered species (Gray Wolf, Grizzly Bear, Canada Lynx, and Bald Eagle) that potentially could be affected by the Proposed Action. Threatened or endangered fish and plant species are addressed in response to earlier comments. The effects of the Proposed Action on threatened and endangered species are disclosed on pages 24-28 of the EA; the Project Wildlife and Fisheries Biologist's and the Botanist's specialist reports provide additional information and analysis detail for these all of these species.

Biological Assessments for threatened and endangered species have been prepared for this (Project File Section G).

The analysis for this proposal includes the 'Effects at Forest and Regional Scales – Compatibility with NFMA Requirement for Maintaining Species Viability', which includes the grizzly bear, Canada lynx, gray wolf and the bald eagle (Project File Exhibit H-23).

The EA includes an analysis and disclosure of the effects of the alternatives on sensitive species (EA, page 29); the Project Wildlife Biologist's Specialists Report provide a detailed description of the effects analysis for sensitive species (Project File, Exhibits G-4).

A BE for sensitive wildlife species has been prepared for this project (Project File Exhibit G-4).

The EA includes an analysis and disclosure of the effects of the alternatives on management indicator species (EA, pages 30-32); the Project Wildlife Biologist's Specialists Report provide a detailed description of the effects analysis for sensitive species (Project File, Exhibit G-4).

***H. Sensitive Wildlife Species and Management Indicator Species***

***Concern / Issue # 1:***

Implementation of fuel reduction treatments near Pierce Lake may disturb the nesting of an existing common loon pair. The disturbance could be for one season, or, of more critical concern, could be long term due to loss of security cover.

***Response:***

The Common loon has been identified by the Regional Forester as a sensitive species, for which population viability is a concern. To maintain habitat security, the project design retains buffer areas, where no treatments would occur, around Pierce Lake (EA, Figure 2 – Proposed Action Map). The EA includes an analysis and disclosure of the effects of the alternatives on the Common loon (EA, page 29); the Project Wildlife Biologist's Specialists Report provide a detailed description of the effects analysis for the loon Project File Exhibit G-18) and design features have been incorporated into the project to reduce impact to possible nesting of loons at Pierce Lake .

A BE for sensitive wildlife species has been prepared for this project, the BE includes a "may impact individuals or habitat, but will not likely result in a trend toward Federal listing or reduced viability for the population or species (Project File Exhibit G-4).

**Concern / Issue #2:**

Thermal cover values need to be maintained on white-tailed deer and elk winter ranges in the Holland Pierce area.

**Response:**

The white-tailed deer and elk are considered to “commonly hunted big game management indicator species” (species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife, including those that are socially or economically important). The implementation of the proposed action would meet Forest Plan standards for the management of white-tailed deer winter habitat (Project File Exhibit G-6) and elk habitat (Project File Exhibit G-6). The prescriptions used for tree removal reflect guidelines to leave adequate thermal cover on site.

**I. Wildlife, Old Growth Associates**

**Concern / Issue # 1:**

Fuel reduction activities may decrease the amount or character of older forest habitats. No old growth should be entered.

The Flathead NF has failed to insure viability of MIS and TES species to date. Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA.

Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA.

**Response:**

This project does not propose treatment within old growth forest habitat. The project Wildlife Biologist has conducted field reviews and has validated that the proposed fuel reduction and forest health actions does not include vegetative treatments within old growth forest habitat (Project File Exhibit G-5). A BA and BE has been prepared for T&E and sensitive species (Project File Exhibits G-1 and G-4 respectively). The analysis includes the ‘Effects at Forest and Regional Scales – Compatibility with NFMA Requirement for Maintaining Species Viability (Project File Exhibit H-23).

**J. Wildlife, General**

**Concern / Issue # 1: Viability**

Many adverse consequences to wildlife and other elements of the natural environment are associated with logging, including thinning. (For example: “Salvage or thinning operations that remove dead or decayed trees or coarse woody debris on the ground will reduce the availability of forest structures used by fishers and lynx.

It imperative that population viability be assessed at least at the forest-wide scale.

The FS should firmly establish that the species that exist, or historically are believed to have been present in the analysis area are still part of viable populations. The analysis must cover a large enough area to include a cumulative effects analysis area that would include truly viable populations. Analysis must identify viable populations of MIS, TES, at-risk, focal, and demand species of which the individuals in the analysis area are members in order to sustain viable populations.

**Response:**

The EA includes an analysis and disclosure of the effects of the proposed action on the Canada lynx (EA, pages 26-27); a BA has been prepared for the proposed action, which discloses the potential effects to the lynx. The EA includes an analysis and disclosure of the effects of the proposed action on the fisher (EA, page 29); a BE has been prepared for the proposed action, which discloses the potential effects to fishers. The analysis includes the ‘Effects at Forest and Regional Scales – Compatibility with NFMA Requirement for Maintaining Species Viability (Project File Exhibit H-23).

**Concern / Issue # 2: Security**

No temporary roads should be built.

Road closures on Forest Service lands in the Swan Valley are not effective.

**Response:**

The Proposed Action includes the construction and the subsequent reclamation of 3.8 miles of temporary road. As described in Appendix B of this EA, the ID Team has developed design features to minimize the impact of temporary road construction and use. These features include timing and operation restrictions, the reclamation of the temporary roads upon completion of their use, and post-treatment monitoring to determine if there are any changes (increases) in ATV and snowmobile use within the treatment areas.

Independent to the analysis for this project, the Swan Lake Ranger District has completed an evaluation of the effectiveness of the road closures within the project area. Road closures that are ‘ineffective’ have been identified and will be corrected under a district-wide road management maintenance plan.

### ***L. Fuels Management***

#### ***Concern / Issue # 1:***

Most communities require treatment extending less than 400 meters (1312 feet) from the house (Id.)—not the 500 meters you suggest with your “Defensible Fuel Profile Zone.”

#### ***Concern / Issue # 2:***

The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more around homes is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions (Cohen, 1999)

#### ***Response:***

Fuels reduction treatments included in this proposal would result in the placement of approximately 6.7 miles of DFPZs in the wildland/urban interface areas within the project areas. As described in Appendix B of this EA, depending on slope, aspect, and vegetation cover, the width of DFPZs would average between 100 feet to 500 feet.

The ID Team considered an alternative that was responsive to the above described concerns. This alternative was not considered in detail for the following reasons:

An alternative treating only near individual home sites on a limited basis does not fully meet the intent of breaking up fuel continuity generally within the Project Area to allow firefighters to more safely, tactically, and strategically address a fire in the interface area. Such an alternative would limit the ability of fire fighting efforts to more effectively and safely fight a fire in the area as a whole.

Such an alternative would leave significant areas of fuel buildup and dense canopies with ladder fuels within the wildland urban interface area. As described above, leaving such stand conditions untreated would limit options that firefighters would have for safely stopping a moving fire within the interface area, and would leave many areas where crown fire potential could have been reduced within the urban interface untreated. Bypassing the opportunity to treat such areas would not be consistent with the purpose of the project.

Research has determined that treatments intended to reduce fuels around communities at risk, rather than individual structures, need to go beyond the home ignition zone (Graham, 2004). While individual home-by-home treatments can help reduce the risk of loss of individual homes, relying solely on such treatments would forego strategic opportunities for controlling fires within this wildland urban interface area.

Limiting treatments to a smaller area immediately adjacent to homes or structures would only allow for a small subset of the interface area identified in the Seely Swan Fire Plan to be treated in the Project Area. In addition, it would not meet the broader purpose of the proposal in treating fuels in the wildland urban interface area.

Such an alternative does not address the need to improve forest health within the interface area being treated.

***Concern / Issue # 3:***

Prescribed burning alone can be utilized in many cases - possibly here, where managers typically assume mechanical fuel reductions must be used.

***Response:***

In some situations, the use of prescribed burning in lieu of mechanical treatment is an effective option to reduce existing hazardous fuel loadings. However, based on field observations and surveys, the existing ground and ladder fuel loadings are extremely high, and it would be highly unlikely that a prescribed burn would be manageable (controllable) in achieving the desired conditions without putting the wildland/interface in risk of an ‘out of control’ prescribed burn.

The results of proposed mechanical fuel treatments would make it feasible to use prescribed burning, with out unacceptable risks, in the future to maintain the desired conditions within the proposed treatment areas.

The ID Team considered an alternative that would feature prescribed burning in lieu of mechanical fuel reduction treatments. This alternative was not studied in detail because the use of prescribed fire presented an unacceptable risk to adjacent private and NFS lands. This decision was based on field observations and surveys that show that existing levels of ground and ladder fuels are too high to control the intensity and behavior of a prescribed burn (EA, page 11).

***Concern / Issue # 4:***

Since fire exclusion is identified as a culprit, the Flathead NF needs to take a hard look at its fire policies. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider.

***Response:***

Several factors have contributed to the current risk of a ‘stand-replacement’ (catastrophic) wildland fire within the wildland/urban interface areas in the project area. In addition to fire exclusion (fire suppression), these factors include the drought conditions experienced in the northwest during the past decade, and the increased human development of and occupation of private lands within the wildland/urban interface. The implementation of the proposed action is consistent with current fire policy, which includes national, regional, and local emphasis and objectives for the reduction of hazardous fuels within the wildland/interface areas. The proposed action is consistent with the National Fire Plan, the Healthy Forests Initiative, the Healthy Forests Restoration Act, and the Seeley Swan Fire Plan.

As the respondent suggested, the development and implementation of a forest-wide fire policy is a programmatic issue; and, therefore, is outside the scope of the intent of the site-specific analysis for the Holland Pierce Fuels Reduction and Forest Health proposal.

***Concern / Issue # 5:***

Use restoration practices that do not require heavy machinery and commercial logging to accomplish the fuel reduction treatments.

***Response:***

The ID Team considered an alternative that was responsive to the above suggestion. This alternative was not considered in detail because the existing stand conditions require the removal of material and related heavy equipment use on many sites within the Project Area to meet the purpose and need of the project. A significant portion of the material that needs to be removed to achieve the project objectives is large enough that it would not be practical or economically feasible to do this work by hand (EA, page 11).

***Concern / Issue # 6:***

Expand the treatments to include the area directly on the south side of Holland Lake.

***Response:***

Initially, the ID Team considered including two areas on the south side of Holland Lake for fuels reduction treatments which were subsequently dropped from the proposed action. The first area, referred to as unit number 18 in the initial scoping document, was dropped because of sensitive soils, riparian habitat conservation, and wet area issues. After further site visits, the ID Team concluded that because the site is located on a north aspect and is a cool-moist habitat site, that the treatment of this unit was not needed to meet the purpose and need for the proposal. The second area, which was not included in the initial scoping document, is located in the vicinity of the SW ¼ of Section 35, T20N, R16W; this area was dropped because of old growth forest habitat, sensitive soil, riparian habitat conservation, and wet area issues. As described in the response to the following concern, the proposed action does include fuel reduction treatment adjacent to NFS roads along the south side of Holland Lake.

**Concern / Issue # 7:**

The Holland Lake road that provides access to the cabins on the south side of the lake is a one-lane road which provides ingress/egress – there's a lot of hazardous fuels adjacent to the road – if a fire should occur, our egress route could be blocked.

**Response:**

The ID Team concurs with this concern about an egress route from the Holland Lake. The management actions included in the proposed action includes the reduction of hazardous fuels along NFS roads 9558 and 44a, both of which would provide egress routes from the Holland Lake area should a wildfire event occur (EA, Figure 2, Appendix B, B-3).

**Concern / Issue # 8:**

The existing ground fuels (wildfall trees) in the Pierce Lake area adjacent to the cabins is presenting a fire hazard.

**Response:**

The ID Team concurs with this concern about the hazardous fuels buildup within the recreational sites adjacent to Pierce Lake. Fuels reduction actions within the recreation residence sites will be accomplished in accordance with the terms and conditions of the existing special use permits. The analysis for this proposal considered fuel reduction actions within the recreational residence sites as 'reasonably foreseeable actions' in the cumulative effects analysis for the Holland Pierce Fuels Reduction and Forest Health proposal.

**Concern / Issue # 9:**

The foreseeable prescribed burning and the burning of slash created by the fuel treatments will create excessive smoke and pollution.

**Response:**

The Proposed Action includes the removal, or the piling and burning and/or chipping of slash and tree residue resulting from the fuel reduction treatments. As much as practicable and economically feasible, this material will be removed in the form of forest products (stud logs, posts & poles, and pulp) (EA, Appendix B, page B-3). The burning activities associated with the proposed action would comply with the Clean Air Act and would meet the requirements of the Montana Air Quality Bureau (EA, page 37).

**Concern / Issue # 10:**

Please delete the proposed fuel reduction treatments in Section 4 – local landowners adamantly oppose logging these acres;; uprading the road would be costly and unnessary; the tree diamenters are small and less likely to equal the cost of the project; Plum Creek adjoining lands is already heavily cut and visually unappealing.reduction.

Request you omit the fuel reduction treatments in the Rumble Creek area; there are no nearby residences; would compromise the aesthetics; are already extensive areas of Plum Creek clearcuts; concerned about dust and road damage from logging trucks.

***Response:***

After additional field review of the fuel treatments initially proposed in the Rumble Creek area, the ID Team concluded that those units should be eliminated from the proposed action. The decision to drop these units from the proposed action was based on economic, feasibility, and access concerns (Project File Exhibit A-9).

***Concern / Issue # 11:***

The project will directly affect the forest service land immediately surrounding our home, and we are deeply concerned. Currently, the forest surrounding our home provides protection from Hwy. 83 traffic noise pollution, as well as privacy from neighbors. Our home is in a clearing, set away from the forested area. We enjoy the rich wildlife and protection from heat and wind that will surely be eliminated if the forest is thinned as planned. When we moved here, we realized there were certain risks, including fire danger; we chose to take them. Please leave the forest in and around our home and general area intact.

***Response:***

Forest Service representatives have met with local landowners, including the above respondent, to talk about the proposed fuel reduction treatments that are adjacent to or in the vicinity of their property. These meetings included discussions on how the treatments would be implemented and what the post-treatment desired conditions would be. Local landowners would be contacted prior to the start of treatments adjacent to their property. In some cases, if practicable and feasible, the layout of the treatment unit and prescription could be adjusted to be responsive to the adjacent landowner's recommendations.

***Concern / Issue # 12:***

Monitoring is very important yet is generally neglected on the Flathead National Forest. Since these fuels reduction projects are relatively new the Forest must develop a monitoring protocol to see whether the objectives are being met and whether wildlife, fish and water quality are being affected.

***Response:***

The ID team agrees that monitoring is very important. The findings from recent monitoring within the Holland Pierce Fuels Reduction and Forest Health project area has been very helpful to the ID Team in their development fuel reduction proposal and associated design features. This monitoring provided information on noxious weeds, riparian areas, fish population and habitat, and T&E and sensitive plants (Project File Exhibit H-19). Monitoring activities associated with the proposal are described in Appendix B of the EA.

The development of a Forest protocol for monitoring is beyond the scope of Holland Pierce Fuels Reduction and Forest Health proposal.

**Concern / Issue # 13:**

Maintenance of these defensible fuel profile zones is something that needs to be addressed in the project. There must be some plan as to how they will be maintained over time realizing that funding may vary.

**Response:**

It is recognized that the defensible fuel profile zones, as well as the fuel reduction zones, will need follow-up treatments in the future to maintain their effectiveness and desired conditions. Based on prior experience with pre-commercial and commercial thinning projects, it is expected that the effectiveness of the proposed DFPZs vegetative treatments would last for one to two decades; during that time period, they would gradually revert back to near pre-treatment conditions. It is highly likely, that the mechanical treatments implemented in this proposal would establish conditions where the future follow-up ‘maintenance’ treatments could be accomplished with the use of prescribed fire - at the time that the maintenance treatments would occur, there would be significantly less surface and aerial (ladder) fuels compared to the current conditions.

At this time, it is uncertain what the future national, regional, and local fuels reduction emphasis and direction will be, or if resources (including funding) would be available to conduct follow-up treatments 10 to 20 years into the future.

A decision to implement the Holland Pierce Fuels Reduction and Forest Health proposal would not include future maintenance treatments within the project area. Future treatments within the project area would require a separate NEPA documentation and decision.

**M. Road Management**

**Concern / Issue # 1:**

Roads often have devastating impacts on water quality and fish habitat by increasing landslides, erosion, and siltation of streams. Roads also fragment forests and degrade or eliminate habitat for species that depend on remote landscapes, such as grizzly bears, wolves, and other large, wide-ranging predators. The FS must utilize the Roads Analysis Process and analyze travel management, including road obliteration possibilities, in the analysis area.

**Response:**

The ID Team agrees that roads can have adverse impacts on natural resources as described in this comment. Field observations indicate that the soils within the project are relatively stable (Project File, Exhibit G-2) and that water quality and fisheries habitat are not being significantly affected by erosion and siltation of streams (Project File, Exhibits G-3 and G-7 respectively). The project Wildlife Biologist has considered the impact of existing roads on threatened and endangered species (Project File Exhibit G-1) and sensitive species (Project File Exhibit G-4).

The Proposed Action includes the construction and subsequent reclamation of approximately 3.8 miles of temporary road needed to access the proposed treatment units. The proposed temporary road locations do not require any stream crossings. The ID Team has developed project design features to minimize the environmental impacts of the temporary road construction (EA Appendix B). The impacts of the temporary roads are analyzed and their effects disclosed by resource area in the EA (pages 19-38 and in the Project File Section G).

The Proposed Action includes design features that would reduce impacts to watershed health resulting from existing roads, these features include the application of road BMPs on approximately 22 miles of NFS roads, the elimination of five sediment sources identified by sediment source surveys associated with the development of the Swan Lake Watershed TMDL, and fish passage improvements (EA, Appendix B).

A roads analysis has been prepared for this project (Project File Exhibits G-14 ).

***Concern / Issue # 2:***

The road into Pierce Lake needs to be repaired.

***Response:***

The Proposed Action includes bringing the roads accessing the Pierce Lake area (NFS roads 1030, 1030A, and 9569) up to Best Management Standards (Project File Exhibits G-14 and H-17).

***Concern / Issue # 3:***

Please utilize the NEPA process to clarify any roadless boundary issues. It's is not adequate to merely accept previous, often arbitrary roadless inventories—unroaded areas adjacent to inventoried areas were often left out.

***Response:***

The proposed actions are not located within or adjacent to inventoried roadless areas or unroaded areas (EA, Figure 2 – Proposed Action Map, EA; Table 1 – Management Area Descriptions, Applicable Standards, and Acres Proposed for Treatment).

***N. Cumulative Effects***

***Concern / Issue # 1:***

Please disclose the names of all other past logging projects (implemented during the life of the Forest Plan) whose analysis area(s) encompass the areas to be logged under this proposal.

***Response:***

Past actions, including past logging project on NFS, Plum Creek Timber Company, and private lands, within the project area have been considered in the cumulative effects analysis for this proposal (EA, pages 18-19). Exhibit F-1 in the Project File includes detailed information on past logging activities within the project area. The Affected Environment narratives in the resource specialists reports (Project File Section G) includes the effects of past actions in that they are now assessed as part of the existing condition of the landscape (EA, page 15). The development and design of the proposed actions has taken into account the checkerboard ownership and past timber harvest within the project area (EA, Appendix B; Project File, Exhibit G-12).

***O. Analysis Process***

***Concern / Issue #1:***

We are not convinced, based upon the paucity of information in your scoping notice, that the action can legally be categorically excluded from more detailed NEPA analysis.

***Response:***

An Environmental Assessment (EA) has been prepared for the Holland Pierce Fuels Reduction and Forest Health proposal. The analysis for this EA is being conducted in compliance with the National Environmental Policy Act and other relevant Federal and State laws and regulations. The proposed action has been developed under the authorities of the 2003 Healthy Forests Restoration Act.

***Concern / Issue # 2:***

It has been well-established that site-specific BEs or BAs must be prepared for all actions such as this. “Existing conditions” obviously are the current conditions of the resources as a result of past actions.

***Response:***

The project Wildlife Biologist, Fisheries Biologist, and Botanist have completed BAs for threatened and endangered species and BEs for sensitive species (Project File Section G). The Affected Environment narratives in the resource specialists reports (Project File Section G) includes the effects of past actions in that they are now assessed as part of the existing condition of the landscape (EA, page 15).

## APPENDIX D

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### Glossary & Acronyms

**ACTION ALTERNATIVE** - An alternative that proposes some management action, as contrasted to the No Action Alternative.

**ADMINISTRATIVE APPEAL** - A request to a higher authority for review of a decision related to an Environmental Impact Statement, Environmental Analysis, or Categorical Exclusion.

**AFFECTED ENVIRONMENT** - The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

**AGE OR SIZE CLASS** - A distinct group of trees, or portion of growing stock recognized on the basis of age (or size).

**AIRSHED** - Basic geographic units in which air quality is managed.

**ALTERNATIVE** - A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis. One of the several policies, plans or projects, proposed for decision-making.

**BANK COVER** - Living streamside vegetation overhanging the water for up to one meter above the water surface.

**BEAR MANAGEMENT AREA (BMA)** – Areas delineated to include important habitat components and to implement standards and guidelines pertaining to grizzly bears. These areas have also been used for evaluating habitat for other wildlife species including big game and old growth indicator species.

**BEAR MANAGEMENT SUBUNIT** – An area approximately the size of an average female home range (about 50 mi<sup>2</sup>), generally from ridge top to valley bottom, and including all seasonal habitats.

**BEST MANAGEMENT PRACTICES (BMPs)** - Methods, measures or practices to prevent or reduce water pollution, including but not limited to, structural and non-structural controls, operation and maintenance procedures, other requirements, and scheduling and distribution of activities. Usually BMPs are applied as a system of practices rather than a single practice. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

**BIOLOGICAL ASSESSMENT (BA)** - A document prepared by a federal agency for the purpose of identifying any endangered species or threatened species, which is likely to be affected by an agency action. This document facilitates compliance with the Endangered Species Act. The federal agency, in consultation with the Secretary of Interior, must insure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of its habitat.

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**BIOLOGICAL EVALUATION (BE)**- A document prepared by the Forest Service to review programs or activities to determine how an action might affect any threatened, endangered, proposed, or sensitive species. This document often focuses only on sensitive species if the Threatened, Endangered, and Proposed Species will be covered in a Biological Assessment.

**BIOMASS (FUELS)** - Live and dead accumulations of organic material.

**BLOWDOWN (Windthrow)** - Uprooting by the wind. Also refers to a tree or trees so uprooted.

**BOARD FOOT** - A unit of measurement represented by a board one foot square and one inch thick.

**BROWSE** - Twigs, leaves, and young shoots of trees and shrubs on which animal feed; in particular, those shrubs which are utilized by big game animals for food.

**BUFFER** – A land area designated to block or absorb unwanted effects to the area beyond the buffer and to preserve other qualities along or adjacent to roads, trails, watercourses, and recreation sites.

**BURN SEVERITY** – A relative measure of the degree of change in a watershed that related to the intensity of the fire on soil hydrological function. Burn severity is delineated on topographic maps of polygons. Classes of burn severity are high, moderate, low, and unburned.

**CANOPY** - The forest cover of branches and foliage formed by tree crowns.

**CANADA LYNX CONSERVATION ASSESSMENT AND STRATEGY (LCAS)**

**CANOPY COVER or CROWN CLOSURE** - The percentage of ground surface that is shaded by the live foliage of plants as seen from above. Used to describe how open or dense a stand of trees is.

**CAPABILITY** - The potential of an area of land and/or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils, and geology; as well as the application of management practices, such as silviculture or protection from fires, insects, and disease.

**CAVITY** - A hollow in a tree that is used by birds or mammals for nesting, denning, roosting, etc.

**CLOSED CANOPY** - The description given to a stand when the crowns of the main level of trees forming the canopy are touching and intermingled so that light cannot reach the forest floor directly.

**COARSE WOODY DEBRIS** - Any piece(s) of dead woody material, e.g., dead boles, limbs, and large root masses on the ground or in streams.

**COMMERCIAL THINNING** - A silviculture treatment that “thins” out an overstocked stand by removing trees, which are large enough to be sold as products such as poles or fence posts. It is carried out to improve the health and growth rate of the remaining crop trees.

**COMPOSITION (SPECIES)** - The mix of different species that make up a plant or animal community, and their relative abundance.

**CONDITION CLASS** – A function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components, such as species composition, structural stage, stand age, and canopy closure. Categorized by three classes as follows: Condition Class 1 – Fire regimes are within or near an historical range; Condition Class 2 – Fire regimes have been

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moderately altered from their historical range; Condition Class 3 – Fire regimes have been significantly altered from their historical range.

**CONSULTATION** - A process required by Section 7 of the Endangered Species Act whereby Federal agencies proposing activities in a listed species habitat confer with the U.S. Fish and Wildlife Service about the impacts of the activity on the species. Consultation may be informal, and thus advisory, or formal, and thus binding.

**CORRIDOR** - A band of vegetation, usually older forest, which serves to connect distinct patches on the landscape. By providing connectivity, corridors permit the movement of plant and animal species between what would otherwise be isolated patches.

**COUNCIL ON ENVIRONMENTAL QUALITY (CEQ)** - An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

**COVER/FORAGE RATIO** - The ratio of tree cover (usually conifer types) to foraging areas (natural openings, clearcuts, etc.).

**COVER TYPE** - The present vegetation composition of an area, described by the dominant plant species.

**CROWN** - The part of a tree or other woody plant bearing live branches and foliage.

**CROWN CLOSURE** (see Canopy Cover)

**CROWN FIRE** - A fire that advances from top-to-top of trees or shrubs more or less independently of the surface fire. Sometimes, crown fires are classed as either running or dependent, to distinguish the degree of independence from the surface fire.

**CULTURAL RESOURCES** - The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events; as a sacred area of native peoples, etc.) of an area of prehistoric or historic occupation.

**CUMULATIVE EFFECT** - The impact on the environment, which results from the incremental impact of the action when added to other actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

**DEFENSIBLE FUEL PROFILE ZONE (DFPZ)** – A 100 to 500 foot wide strip adjacent to private lands where forest fuels (both live and dead) are reduced

**DEFENSIBLE SPACE** - That area between a structure and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and to provide an opportunity for firefighters to effectively and safely defend the structure.

**DENSITY (STAND)** - The number of trees growing in a given area, usually expressed in terms of trees per acre.

**DIAMETER BREAST HEIGHT (dbh)** - The diameter of a tree measured four and one-half feet above the ground.

**DIRECT EFFECT** - Effects on the environment that occur at the same time and place as the initial cause or action.

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**DISPERSAL** - The movement of organisms away from the place of birth or from centers of population density.

**DISTURBANCE (ecosystem)** - Refers to events that alter the structure, composition, or function of terrestrial or aquatic habitats. Natural disturbances include, among others, drought, floods, wind, fires, wildlife grazing, and insects and pathogens. Human-caused disturbances include actions such as timber harvest, livestock grazing, roads, and the introduction of exotic species.

**DISTURBANCE REGIME** - Natural pattern of periodic disturbances, such as fire or flooding.

**DIVERSITY** - The distribution and abundance of different plant and animal communities and species.

**DUFF** - The partially decayed organic matter on the forest floor.

**EARLY-SERIAL/STRUCTURAL STAGE** - A stage of development of an ecosystem from a disturbed, relatively unvegetated state to a plant community that is up to 30 years old. Stand structure is seedling and sapling sized.

**ECOSYSTEM** - A functional unit consisting of all the living organisms (plants, animals, and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size--a log, pond, field, forest, or the earth's biosphere--but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation, for example, forest ecosystem, old-growth ecosystem, or range ecosystem.

**ENDANGERED SPECIES** - Any species, plant, or animal that is in danger of extinction throughout all or a significant portion of its range. In accordance with the 1973 Endangered Species Act, the Secretary of the Interior identifies endangered species.

**ENDANGERED SPECIES ACT (ESA)**

**ENDEMIC** - A species whose natural occurrence is confined to a certain region and whose distribution is relatively limited (vertebrate biology). A population that is at equilibrium or low density (invertebrate biology or pathology).

**ENVIRONMENTAL ANALYSIS (EA)**

**ENVIRONMENTAL IMPACT STATEMENT (EIS)**

**ESCAPE ROUTE** – A means to access a safety zone.

**FIRE EXCLUSION** - The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

**FIRE EVENT (fire occurrence, fire incidence)** - A single fire or series of fires within an area at a particular time.

**FIRE FREQUENCY** – A general term referring to the recurrence of fire in a given area over time.

**FIRE HAZARD** - The potential fire behavior for a fuel type, regardless of the fuel type's weather-influenced fuel moisture content or its resistance to fire line construction. Assessment is based on physical fuel characteristics, such as fuel arrangement, fuel load, condition of herbaceous vegetation, and presence of elevated fuels.

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**FIRE INTENSITY** – Based on temperature, flame length, rate of spread, heat of combustion, and total amount and size of fuel consumed. Accounts for convective heat rising into the atmosphere and fire effects to the overstory.

**FIRE INTOLERANT (or “intolerant”)** - Species of plants that do not grow well or die from the effects of fire. Generally these species are shade-tolerant as well.

**FIRE MANAGEMENT ZONE (FMZ)** – A geographic area delineated by the “appropriate management response” to a wildland fire. Defined by fuels, topography, values at risk, threats to private property, wilderness boundaries, etc.

**FIRE REGIMES** - The ecological effects of frequency, intensity, extent, season, and synergistic interactions with other disturbances, such as insects and disease, classified into generalized levels of fire severity.

**FIRE RETURN INTERVAL (fire Interval)** - The number of years between successive fire events in a given area.

**FIRE RISK** - The probability or chance of fire starting determined by the presence and activities of causative agents.

**FIRE ROTATION** – The length of time necessary for an area equal in size to the study area to burn.

**FIRE SEVERITY** – A relative measure of the post-fire appearance of vegetation (residual fuels/mortality) as it related to the intensity of the fire and its consumptive effects on vegetation.

**FIRE SUPPRESSION (Fire Control)** - All of the work and activities connected with fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

**FIRE TOLERANT (or “tolerant”)** - Species of plants that can withstand certain frequency and intensity of fire. Generally these species are shade-intolerant as well.

**FIREFIGHTER SAFETY** - A work environment where foreseeable risks have been minimized through the mitigation of known hazards associated with wildlife suppression.

**FISH HABITAT** - The place where a population of fish species lives and its surroundings; includes the provision of life requirements such food and cover.

**FISH PASSAGE** - Clear access for migrating fish through a potential barrier.

**FISHERY** - The total population of fish in a stream or body of water and the physical, chemical, and biological factors affecting that population.

**FORAGE** - All browse and non-woody plants available to livestock or wildlife for feed.

**FORB** – Any herbaceous (herb-like) plant other than grass or grass-like plants that has little or no wood on it. For example, wildflowers are forbs.

**FOREST DEVELOPMENT ROAD (FDR)** - A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration, and use of the National Forest System and the use and development of its resources.

**FOREST HEALTH** - (also called forested landscape or forestland) is defined as: the conditions under which the integrity of the soil and ecological processes are sustained resulting in systems

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that maintain their diversity, resiliency, and productivity with associated sustainable human resource issues.

**FOREST PLAN** - The Flathead National Forest Land and Resource Management Plan.. A Forest Plan is a document prepared under the National Forest Management Act by each national forest that generally describes how the resources in the forest will be managed for a 10 to 15 year period.

**FOREST STRUCTURE** - The mix and distribution of tree sizes, layers, and ages in a forest. Some stands are mostly one size (single-story), some are two-story, and some are a mix of trees of different ages and sizes (multi-story).

**FOREST TYPE** relates to the tree species (and to generalized understory plant) composition.

**FSH** - Forest Service Handbook

**FSM** - Forest Service Manual

**FUELS** - Includes living plants, dead, woody vegetative materials; and other vegetative materials capable of burning.

**FUEL LOADING** - The oven dry weight of fuels in a given area, usually expressed in tons per acre. Fuel loadings may be referenced to fuel size or time-lag categories; and may include surface fuels or total fuels.

**FUEL MANAGEMENT** - Manipulation or reduction of flammable matter for the purpose of reducing the intensity or rate of spread of a fire, while preserving and enhancing environmental quality.

**FUELS REDUCTION ZONE-** Areas in which continuous high hazard fuels are broken up. They are designed to increase firefighter safety and reduce resistance to fire control efforts. FRZs may be of any size or shape. They may have a higher number of snags, down logs, and canopy closure than other fuels treatment zones. They are recognized as being a significant portion of a complete fuels management programs. .

**FUEL TREATMENT** - The rearrangement or disposal of natural or activity fuels.

**GEOGRAPHIC INFORMATION SYSTEM (GIS)** - Computer software that provides database and spatial analytic capabilities.

**GOAL** – A concise statement that describes a desired condition to be achieved. It is normally expressed in broad, general terms and is timeless in that it has no specific date that it is to be completed. Goal statements form the principal basis upon which objectives are developed.

**GUIDELINE** - An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management standards and guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

**HABITAT TYPE** - An aggregation of all land areas potentially capable of producing similar plant communities at climax.

**HAZARD** - A real or potential condition that may result in an undesired event, the cause of risk. Hazard can apply to the probability of tree mortality or damage by an insect or disease and also represents material or fuel that will ignite and burn.

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**HIDING COVER** - Vegetation used by an animal for hiding. The amount and quality of vegetation needed depends on the animal's size, mobility, and reluctance to venture into relatively open areas. For an elk, hiding cover conceals 90 percent of a standing adult elk from the view of a human at a distance equal to or less than 200 feet. Hiding cover allows elk to use areas for bedding, foraging, thermal relief, wallowing, or other functions, but it does not necessarily provide security during the hunting season.

**HOME RANGE** - An area, from which intruders may or may not be excluded, to which an individual restricts most of its usual activities.

**INDIRECT EFFECTS** - Secondary effects which occur in locations other than the initial action or significantly later in time.

**INITIAL ATTACK** - An aggressive suppression action consistent with firefighter and public safety and values to be protected.

**INSTREAM COVER** - Anything in the water that provides protection to fish from predators (including turbulence, debris, logs, and rocks).

**INTENSITY** - Energy release rates; these are physical descriptors of the fire, not its ecological effects. Generally referred to as High, Moderate, or Low intensity.

**INTERDISCIPLINARY TEAM (ID TEAM)** - A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

**INTERMITTENT STREAM** - A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow.

**INVASIVE PLANT** – All State and County listed “noxious weeds” are considered invasive plants. Also, other exotic species (not listed by State or Counties as noxious weeds) that can successfully out compete and displace native plant communities.

**INVENTORIED ROADLESS AREA** - An area identified and classified as roadless. These areas were identified during the second Roadless Area Review and Evaluation (RARE II).

**ISSUE** - See Public Issue.

**LADDER FUELS** - Fuels which provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to the ease of torching and crowning.

**LAND AND RESOURCE MANAGEMENT PLAN (Forest Plan)** - A strategic integrated resource plan based on the principles of enhanced public involvement, consideration of all resource values, and resource sustainability.

**LANDSCAPE** - The landforms of a region in the aggregate; the land surface and its associated habitats at scales of many acres to many square miles; a spatially heterogeneous area.

**LANDTYPE** - An inventory map unit with relatively uniform potential for a defined set of land uses. Properties of soils landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

**LARGE WOODY DEBRIS** – Large logs and stumps in streams and on land that provide habitat for aquatic and terrestrial organisms and affects stream function.

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**LATE-SERAL/STRUCTURAL STAGE** - A stage of development of an ecosystem from approximately 80 to 120 years old. Forested stands are generally 12 to 16 inches average dbh.

**LETHAL FIRE/LETHAL FIRE REGIME** - Fire that consumes the entire vegetative community (grasses, shrubs, trees). Also see Stand Replacement Fire.

**LINKAGE (habitat)** - Linkage zones are combinations of landscape structural factors that allow wildlife to move through, and live within, areas influenced by human actions. A linear habitat patch through which a species must travel to reach habitat more suitable for reproduction and other life-sustaining needs.

**LOW-SEVERITY GROUND FIRE** - A fire with low intensity that primarily scorches tree boles, allowing fire tolerant species to survive.

**MANAGEMENT AREA (MA)** - An aggregation of capability areas that have common management direction and may be dispersed over the Forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

**MANAGEMENT INDICATOR SPECIES (MIS)** - Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.

**MATURE TIMBER** - Individual trees or stands of trees that in general are at their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

**MBF and MMBF** - Thousand board feet and million board feet, respectively.

**MEAN FIRE RETURN INTERVAL (Mean Fire Interval)** – The average of all fire intervals in a given area over a given time period.

**MESIC** - Moderately moist.

**MID-SERAL/STRUCTURAL STAGE** - A stage of development of an ecosystem from approximately 30 to 80 years old. Forested stands are generally 5 to 12 inches average dbh. Stand structure is pole- and small sawlog-sized trees.

**MIXED-SEVERITY FIRE/MIXED SEVERITY FIRE REGIME** - Mixed-severity fire regime areas can experience the full range of fire severities during either a single event or consecutive events. In other words, in a single fire event both low severity (killing few trees) and high severity (killing all trees) in patches of variable sizes. This tends to create complex fine-grained spatial patterns of vegetation conditions across a landscape.

**MOIST SITES (ELK)** – An important characteristic of elk habitat consisting of wet meadows, ponds, seeps, and springs, and typically located in more remote, upper-drainage perched sites.

**MONITORING AND EVALUATION** - The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

**MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS (MDFW&P)**

**MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC)**

**MONTANA STATE HISTORIC PRESERVATION OFFICE (SHPO)**

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**MONTANE** - Of, growing in, or inhabiting mountain areas.

**NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)** - An act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.

**NATIONAL FOREST MANAGEMENT ACT (NFMA)** - A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

**NATIONAL FOREST SYSTEM (NFS)** - All national forest lands reserved or withdrawn from the public domain of the United States, all national forests lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under Title III.

**NATIONAL WILDERNESS PRESERVATION SYSTEM** - All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

**NATIVE SPECIES** - Species that are indigenous to a region, as opposed to introduced or exotic species.

**NATIVE (NATURAL) SUCCESSION AND DISTURBANCE REGIMES** - The historic patterns (frequency and extent) of fire, insects, wind, landslides and other natural processes in an area.

**NATURAL REGENERATION** - Renewal of a tree crop by natural seeding, sprouting, suckering, or layering.

**NO ACTION ALTERNATIVE** - The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.

**NON-LETHAL FIRE/NON-LETHAL FIRE REGIME** – Fire that primarily consumes surface fuels causing little mortality to overstory trees. See also Low Severity Fire.

**NOXIOUS AND INVASIVE WEED EA (NIWC)**

**NOXIOUS WEED** - Any exotic plant species established or that may be introduced in the area which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses.

**OBJECTION PROCESS** - the Predecisional Administrative Review Process pursuant to 36 CFR 218, subpart A. It is not subject to notice, comment, and appeal provisions pursuant to 36 CFR 215 (see 36 CFR 218.3).

**OLD GROWTH HABITAT** - A community of forest vegetation which has reached a late stage of plant succession characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure will typically have multi-storied crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameters exhibiting a wide range of defect and breakage both live and dead, standing and down. The time it takes for a forest stand to develop into old growth condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature such as weather, insect, disease, fire, and the actions of man also affects the rate of development of old-growth stand conditions.

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**OPEN ROAD** – A road with no restrictions on motorized vehicle use.

**OVERMATURE TIMBER** - Individual trees or stands of trees that in general are past their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

**OVERSTORY** - The portion of the trees that form the uppermost canopy layer in a forest of more than one story.

**PERENNIAL STREAMS** - Streams that flow continuously throughout most years and whose upper surface generally stands lower than the water table in the region adjoining the stream.

**PLUM CREEK TIMBER COMPANY, LLP (Plum Creek)**

**PLUME-DOMINATED FIRE** - The power of the fire is greater than the power of the wind in influencing its behavior.

**POLE** - A tree between a sapling and small timber size at least five inches in diameter at breast height but smaller than 8" dbh.

**POOL** - A portion of the stream with reduced current velocity, often with water deeper than the surrounding areas, and which is usable by fish for resting and cover.

**POPULATION** - A group of coexisting (conspecific) individuals that interbreed if they are sexually reproductive.

**POTENTIAL HABITAT (Wildlife)** - Habitat that is likely to be occupied by a wildlife species or group of species, currently or in the near future.

**POTENTIAL VEGETATION GROUP (PVG)** - Groupings of habitat groups on the basis of similarity of general moisture or temperature environment.

**PRE-COMMERCIAL THINNING** - The selective felling, deadening, or removal of trees in a young stand primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.

**PREFERRED ALTERNATIVE** - The agency's preferred alternative is the alternative that the agency believes would best fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors, and which meets the purpose and need of the NEPA document.

**PRESCRIBED BURNING** - The controlled use of fire to reduce or eliminate the unincorporated organic matter of the forest floor, or low, undesirable vegetation. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

**PROPOSED ACTION** - The proposed action or proposal exists at that stage in the development of an action when an agency subject to the Act (NEPA) has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated.

**PUBLIC INVOLVEMENT** - A process designed to broaden the information base upon which agency decisions are made by informing the public about Forest Service activities, plans, and decisions, and participation in the planning processes which lead to final decision making.

**PUBLIC ISSUE** - A subject or question of widespread public interest identified through public participation relating to management of National Forest System lands.

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**RANGER DISTRICT** – Administrative subdivision of the Forest supervised by a District Ranger.

**REACH** - A length of stream channel, lake, or inlet exhibiting, on average, uniform hydraulic properties and morphology.

**REARING HABITAT** - In the case of juvenile westslope cutthroat trout, this is primarily the pool environment in streams.

**RECOVERY PLAN** - A plan that details actions or conditions necessary to promote species recovery, that is, improvement in the status of species listed under the Endangered Species Act to the point at which listing is no longer appropriate. Plans are required for virtually all listed species.

**REFORESTATION** - The renewal of forest cover by seeding, planting, and natural means.

**REGENERATION** - The renewal of a forest, whether by natural or artificial means. This term may also refer to a tree crop itself.

**REHABILITATION (Road)** - The act of maintaining a road and improving drainage features, usually to meet Best Management Practices standards.

**RELEASE** - Freeing a tree or group of trees from more immediate competition by cutting or otherwise eliminating growth that is overtopping or closely surrounding them.

**RESIDENT FISH** - Non-migratory fish species.

**RESILIENT, RESILIENCY** - The ability of a system to respond to disturbances. Resiliency is one of the properties that enable the system to persist in many different states or successional stages.

**RESPONSIBLE OFFICIAL** - The Forest Service employee who has the authority to select and/or carry out a specific planning action.

**RESTORE, RESTORATION** - The re-creation of a natural or self-sustaining, resilient community or ecosystem, or a movement in that direction.

**RESTRICTED ROAD** - A road on which motorized vehicle use is restricted during the entire non-denning period. The road requires physical obstruction and motorized vehicle use in the non-denning period is legally restricted by order.

**RIPARIAN AREAS** - Areas with distinctive resource values and characteristics that are comprised of an aquatic ecosystem and adjacent upland areas that have direct relationships with the aquatic system. This is considered the horizontal distance of approximately 100 feet from the normal high water line of a stream channel, or from the shoreline of a standing body of water.

**RIPARIAN ECOSYSTEM** - A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. It is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

**RIPARIAN HABITAT CONSERVATION AREA (RHCA)** - Portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. RHCAs were established as INFISH guidelines.

**RIPARIAN LANDTYPE** - Integrated map units of the types of riparian habitats based on topography, substrate materials (i.e. clays or boulders), and associated vegetation.

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**RIPARIAN WILDLIFE HABITAT** - Vegetation growing close to a watercourse, lake, swamp, or spring that is generally critical for wildlife cover, fish food organisms, stream nutrients and large organic debris, and for streambank stability.

**RISK** - The probability of a hazard and/or the consequences of that hazard (hazards are undesirable events).

**ROAD DENSITY** – Number of miles in a given area.

**ROAD MANAGEMENT** - The combination of both traffic management and maintenance management operations. Traffic management is the continuous process of analyzing, controlling, and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.

**ROADLESS AREA** – A National Forest area which (1) is larger than 5,000 acres, or if smaller than 5,000 acres, contiguous to a designated wilderness or primitive area; (2) contains no roads; and (3) has been inventoried by the Forest System for possible inclusion in the Wilderness Preservation System.

**SALVAGE** – Harvest of trees that are dead, dying, or deteriorating due to fire, wind, insect or other damage, or disease.

**SAPLING** - A young tree that is larger than a seedling but smaller than a pole, typically 5 to 25 feet tall.

**SCOPING PROCESS** - An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly (CEQ regulations, 40 CFR 1501.7).

**SECURITY** - The protection inherent in any situation that allows a wildlife species to remain in a defined area despite an increase in stress or disturbance, such as that associated with hunting season. The components of security include vegetation, topography, the size of the blocks of vegetation, road density, distance from roads, intensity of the disturbance, and seasonal timing.

**SEDIMENT** - Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

**SEEDLING** - A young tree that has just germinated but has not yet reached sapling size, typically 1 to 5 feet tall.

**SEEDLING/SAPLING** - A size category for forest stands in which trees less 5 inches in diameter are the predominant vegetation.

**SENSITIVE SPECIES** - Those wildlife and plant species identified by the Regional Forester for which population viability is a concern because of significant current or predicted downward trends in (a) population numbers or density, or (b) habitat capability that would reduce a species' existing distribution.

**SERAL** - A biotic community that is developmental; a transitory stage in an ecologic succession.

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**SERAL STAGE** (also called successional or structural stage) refers to vegetation structural development; and describes the mix and distribution of tree species, sizes, canopy layers, ages, and general conditions in a forest.

**SERAL/STRUCTURAL STAGE** - A stage of development of an ecosystem from a disturbed, relatively unvegetated state to a complex, mature plant community.

**SEVERITY** - Refers to the ecological effects of fires, usually on the dominant organisms of the ecosystem, for example a stand dominated by lodgepole pine.

**SHADE-INTOLERANT** - Species of plants that do not grow well or die from the effects of too much shade. Generally these are fire-tolerant species.

**SHADE-TOLERANT** - Species of plants that can develop and grow in the shade of other plants. Generally these are fire-intolerant species.

**SILVICULTURE** - The theory and practice of controlling the establishment, composition, growth, and quality of forest stands in order to achieve the objectives of management.

**SILVICULTURE DIAGNOSIS** - The process of compiling, summarizing, analyzing, and recording of stand data.

**SILVICULTURAL PRESCRIPTION** - A written document that describes management activities needed to implement silvicultural treatment or treatment sequence. The prescription documents the results of the analysis during the diagnosis phase.

**SILVICULTURAL SYSTEMS** - A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes all cultural management practices performed during the life of the stand, such as regeneration cutting, thinning, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits.

**SITE PREPARATION** - A general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.

**SITE PRODUCTIVITY** - Production capability of a specific area of land.

**SLASH** - The residue left on the ground after felling and other silvicultural operations and/or accumulating there as a result of storms, fire, or poisoning trees.

**SNAG** - A standing dead tree usually greater than five feet in height and six inches in diameter at breast height.

**SOIL PRODUCTIVITY** - The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

**SPATIAL** – Of, relating to, involving, or having the nature of space.

**SPAWNING GRAVEL** - Small gravels (1/4" - 1.0" diameter) in streams grouped in areas of about one square foot or larger with good water circulation through them.

**SPAWNING HABITAT** - Areas of substrate that provide well-oxygenated and suitable sized gravels for fish spawning.

**SPECIES** - A group of actually or potentially interbreeding populations that are reproductively isolated from all other kinds of organisms.

**SPECIFIED ROAD** - See Forest Development Road, above.

**STAGNATION** - A condition where plant growth is markedly reduced or even arrested through, e.g., competition, state of the soil, or disease.

**STAND** - A community of trees or other vegetative growth occupying a specific area and sufficiently uniform in composition (species), age, spatial arrangement, and conditions as to be distinguishable from the other growth on adjoining lands, so forming a silvicultural or management entity.

**STAND MAINTENANCE FIRE (Non-Lethal)** - Fire that emphasizes the survival of the living overstory vegetation.

**STAND REPLACEMENT FIRE** - Fire that emphasizes the destruction of the living overstory vegetation. See also Lethal fire.

**STAND REPLACEMENT FIRE REGIME** - Stand-replacement fire regimes typically occur on lands that experience predominantly lethal fires, with less than 10% of the forested canopy cover remaining after the fire.

**STAND-REPLACING DISTURBANCE** - An agent such as fire, blowdown, insect or disease epidemic, or timber harvest, that kills or removes enough trees to result in an early-seral/structural stage condition.

**STANDARDS AND GUIDELINES** - An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management standards and guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

**STOCKING** - A measure of timber stand density as it relates to the optimum or desired density to achieve a given management objective.

**STREAMSIDE MANAGEMENT ZONE (SMZ)** - An area adjacent to the bank of a stream or body of open water where extra precaution is necessary to carry out forest practices in order to protect bank edges and water quality.

**STRUCTURE** - The various horizontal and vertical physical elements of the forest, including tree size, canopy composition, quantity and quality of deadwood, ephemeral herbaceous species, density of wildlife trees, fungi, age structure, forest height, etc.

**SUBSPECIES** - Subpopulations or races within a species that are distinguishable by morphological characteristics and, sometimes, by physiological or behavioral characteristics.

**SUBSTRATE** - Mineral and/or organic material that forms the stream bed (stream bottom).

**SUMMER RANGE** - Land used by wildlife species (specifically big game and/or grizzly bear) during the summer months.

**SUCCESSION** - A predictable process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for the establishment of the next stage. The different stages in succession are often referred to as "seral stages."

**SUSTAINABILITY** is defined as: the capacity of forests, ranging from stands to eco-regions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.

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**SYSTEM ROAD** - See Forest Development Road, above.

**TEMPORARY ROAD** - A road constructed to facilitate forest management activities but is reclaimed soon after the activity is completed.

**TERRITORY** - Any area defended by one or more individuals against intrusion by others of the same or different species.

**THERMAL COVER** - Cover used by animals to ameliorate the chilling effects of winter weather or the heating effects of summer weather. For elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more. Shading and windbreaking.

**THREATENED SPECIES** - Any species, plant or animal, which is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. In accordance with the 1973 Endangered Species Act, the Secretary of the Interior identifies endangered species.

**THREATENED AND ENDANGERED SPECIES (TES)**

**TIERING** - Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

**TRAVEL HABITAT** - Habitat used by a wildlife species for daily or periodic movements between areas of higher-quality habitat. For example, for a lynx this would be the forested cover used while traveling between areas used for denning and that used for hunting.

**UNDERBURNING** - A fire that consumes surface fuels but not trees and large shrubs. See also Low Severity Fire and Stand Maintenance Fire.

**UNDERSTORY** - The trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

**UNGULATE** - A mammal with hooves.

**VEGETATIVE SCREENING** - Vegetation (trees, shrubs, etc.) that ameliorates the visual effect of management activities adjacent to viewing areas (i.e. main roads).

**VEGETATIVE SUCCESSION** - A phase in the gradual supplanting of one community of plants by another.

**VIABILITY** - A viable animal or plant species is defined as consisting of self-sustaining populations that are well distributed throughout the species' range. Self-sustaining populations are those that are sufficiently large, and have sufficient genetic diversity to display the array of life history strategies and forms that will provide for their persistence and adaptability in the planning area over time.

**VISUAL RESOURCE** - The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

**WATER QUALITY** - The physical, chemical, and biological properties of water.

**WATER YIELD** - The runoff from a watershed, including groundwater outflow.

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**WATERSHED** - The land area drained by a river system.

**WETLAND** - Areas that under normal circumstances have hydrophytic vegetation, hydric soils, and wetland hydrology.

**WILDERNESS** - Federal land retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is protected and managed so as to preserve its natural conditions which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition, and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

**WILDFIRE** - An unwanted wildland fire that requires a suppression response.

**WILDLAND FIRE** - A non-structure fire, other than prescribed fire, that occurs in the wildland. Any fire originating from an unplanned ignition.

**WILDLAND-RESIDENTIAL INTERFACE** - That line, area, or zone where structures and other human development meet or intermingles with undeveloped wildland or vegetative fuels.

**WIND-DOMINATED FIRE** - The power of the wind is greater than the power of the fire in influencing its behavior.

**WINDFIRM** - A tree (live or dead) or species of tree that is relatively resistant to being blown over by the wind.

**WINDTHROW** - A tree or stand of trees that have been blown over by the wind.

**WINTER RANGE** - The areas available to and used by big game during the winter season. Must contain forage or browse to feed big game. Winter range areas tend to have a relatively low amount of snow cover which enables the animals to reach the forage.