

# Chapter 2

## Alternatives Including the Proposed Action

## **CHAPTER 2– ALTERNATIVES INCLUDING THE PROPOSED ACTION**

### **Introduction**

The process used in developing the alternatives began with a review of the purpose and need for action by the interdisciplinary team. The team also relied on comments received during the scoping process and applicable direction in the Ochoco National Forest Land and Resource Management Plan (LRMP). This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options to the decision maker and the public. In addition, the No Action Alternative (Alternative 1) also provides a baseline against which to measure the action alternatives.

### **Alternatives Considered but Eliminated from Detailed Study**

The July 2, 2002, proposed action was considered but eliminated from detailed study. Noncommercial and prescribed fire treatments would not move stand structures, species composition, canopy closure and fuel loadings to those approximating historic regimes because excess small diameter trees (9 to 20 inches in diameter) would not be treated. Some incremental changes in stand structures would be realized but shade tolerant trees resulting from years of fire suppression would still exist. These trees would still be contributing to high density stand conditions with the resultant increased competition for resources. As nutrients and water become limited, conditions lead to increased risk of mortality from insect and disease attacks. Without removing these trees, there would be no increase in large diameter tree resiliency and these trees would be at a higher risk of loss. Growth rates of trees would continue to be slow and future development of large diameter trees would take longer. Thinning to 12 inches in diameter presents additional problems in managing the fuel loadings. High fuel loadings would increase the risk of unwanted high-intensity fires until the fuels were treated. In some stands, fuel loadings would be so high that underburning would cause additional damage to residual trees. Fuels would need to be handpiled, escalating the cost of treatment. While both multi-strata and single-strata structural conditions are below historic range of variability, single-strata structural conditions are farther removed from minimal levels of historic range of variability. Not removing the 9 to 20 inch diameter trees from below larger diameter trees would not change the structural conditions from multi-strata to single-strata. Therefore, the intention to increase the amount of single-strata stand conditions could not be met. From a fire regime standpoint, these smaller diameter trees act as ladder fuels for unplanned ground fires to easily move into the higher forest level canopy, increasing the risk of stand replacement fires. Prescribed fire within these stands prior to understory thinning could also lead to undesirable levels of damage to trees meant to be left in the residual stand. Leaving these small diameter and high density trees under late and old structured stands would also maintain conditions potentially leading to high-intensity wildfires with the subsequent loss or unacceptable damage to late and old structured stands.

An alternative that considered noncommercial and prescribed fire treatments, and commercial thinning treatments to remove trees greater than 21 inches in diameter was considered but eliminated from detailed study. Across the landscape within the West Maurys Project area, late and old structured habitat is below the historic range of variability. It was felt that maintaining all trees 21 inches in diameter and above would maintain this important structural component across the landscape in both the short term and in some cases, the long term.

An alternative that considered noncommercial thinning and prescribed fire treatments with no new road building in the unroaded areas identified by Oregon Natural Resources Council (ONRC) was not considered. No new roads were proposed for construction within ONRC unroaded area. There are no inventoried roadless areas within the project area as depicted in Appendix C, Ochoco LRMP.

An alternative to consider treatments on non-federal lands was not considered because there is only approximately 320 acres of private land within the project area. Treatment of non-federal lands would not result in any substantial change to the vegetative conditions or reductions in fuel loadings across the landscape.

An alternative to remove or reduce grazing within the project area was not considered in detail because the grazing would not affect any removal of conifer species needed to reduce stand densities and fuel loadings and meet the purpose and need of the project. An environmental analysis of the grazing practices in the Maury Mountains will be conducted in 2005 but no analysis has been completed nor has a proposed action been developed to date.

## **Alternatives Considered in Detail**

Alternatives were developed by the Responsible Official and Interdisciplinary Team to address the key issues. Four alternatives were analyzed in detail including the No Action Alternative. All action alternatives meet the purpose and need for action in varying degrees.

The data and information used to design the alternatives comes from field reconnaissance, satellite imagery, stand exams, and historic records. This data was summarized using a Geographic Information System (GIS), Viable Ecosystems modeling, and fuels modeling. Quantifiable measurements, such as acres and miles, and mapped unit boundaries used to describe the alternatives and effects are based on the best available information and are only estimates. All estimates were utilized similarly across the alternatives.

### **Alternative 1 – (No Action)**

#### **Introduction**

Alternative 1 is the No Action alternative. This alternative serves as a baseline for comparison of the effects of all of the alternatives. Under the No Action Alternative, treatments of prescribed fire, noncommercial thinning, commercial thinning, aspen treatments, road construction, road closures or decommissioning would not occur unless proposed under separate decisions not associated with this project. Maintenance types of actions would continue such as normal road maintenance, fire suppression of unplanned ignitions, and continued grazing in the five allotments within the project area with a total of approximately 1,200 cow calf pairs for 4 months. Additional uses of the area would also continue such as recreational use, both motorized and non-motorized, and hunting. Under Alternative 1, there would be no change in current management direction or in the level of ongoing management activities, such as road maintenance or the noxious weed treatment program, within the project area. The Sherwood prescribed burn and juniper thinning project, approximately 1,300 acres, authorized under a separate decision would still take place within the Hammer Creek Wildlife and Recreation Management Area. The objective for this prescribed fire project is to improve forage quality for big game and to reduce the risk of future, high-intensity fires. This would be attained by using fire to kill small conifer trees in the understory of mixed conifer stands and to reduce the density and distribution of young junipers in juniper woodlands. Additionally, noxious weed treatments authorized in 1998 would continue along Forest Service roads 16 and 17.

There would be no stand density management treatments and stands would continue to incur mortality and large diameter trees would continue to be at risk of loss due to competition among trees. Current levels of insects would probably increase due to the high density conditions, leaving trees vulnerable to attack.

There would be no fuels reduction treatments and areas would continue to accumulate fuels with the potential for a wildfire causing unwanted damage to forested stands, wildlife habitat, soils, and water quality.

There would be no jobs supported with timber sale activities. There would be no seasonal jobs supported with service contracts for noncommercial thinning and fuels treatment contracts. There would be no economic benefit to the local or regional communities.

**Issue 1A: Late and Old Structure** - There would be no treatment of LOS stands and these stands would remain multi-strata with high dense stand conditions causing competition for resources among trees. Large diameter trees, such as ponderosa pine, would remain at a high risk of mortality. Stands would not move towards late and old structure conditions as rapidly as they would with treatment.

**Issue 1B: Connective Corridors** - There would be no treatment of connective corridors within the project area. Stands within corridors would remain in their current condition, providing current levels of canopy closure. Species selecting for more multi-strata conditions would find the corridors conducive to movement. Species selecting for more open, single-strata conditions would not find the travel corridor as optimal. Stands with high densities would continue to be at risk of loss, especially larger diameter ponderosa pine.

**Issue 1C: Goshawk Habitat Treatments** – There would be no treatments within goshawk nest core or post fledging areas. Current habitat conditions would be maintained in the short term. High-density stand conditions would lead to increased competition among trees, contributing to future mortality in the larger diameter trees from insects or disease or wildfire.

**Issue 1D: Elk Security / cover / calving treatments** – There would be no treatments within elk security habitat, cover or calving habitat. Existing conditions for cover would be maintained. It is expected that the elk would continue to utilize areas providing this habitat and would not be disturbed or displaced because no activities are proposed.

**Issue 1E: Old Growth Management Area** – There would be no prescribed fire treatments within the four Old Growth Management Area allocations within the project area. Conditions within each allocated old growth area would trend towards increasing fuel conditions, especially in the Florida, Friday, and Hammer Creek Old Growth Management Areas. These areas currently have higher surface and ladder fuels and are at risk of loss if a wildfire started in or near the areas. The Sanford Creek Old Growth Management Area currently has lower fuel loadings and is not at risk of habitat loss due to high fuel loadings or high stand density conditions.

There are pileated woodpecker feeding areas identified in association with the four allocated Old Growth Management Areas within the project area. Stands within these areas range from ponderosa pine plant associations to mixed conifer plant associations. Most stands contain tree densities in excess of what can be supported in the long-term and are at risk of mortality and loss of important habitat components for pileated woodpeckers.

**Issue 2: Water Yield** – There would be no treatments resulting in reductions of vegetative cover within the project area. Current levels of leaf area index would remain and would increase in the short-term. Because the amount of vegetative cover would remain barring wildfire events, the water yield would be expected to continue in current improving trends. All equivalent harvest area percents in watersheds remain below the LRMP threshold of 35 percent. Equivalent harvest area percents in Newsome and Gibson Creek drainages remain below 20 percent. There is the potential for the percents to increase if a wildfire, dependent on the amount of acres affected and the fire intensity.

## **Actions Common to all Action Alternatives**

### **Introduction**

This section will be used to describe each of the activities, or prescriptions of those activities, that are proposed in varying degrees in all fully developed action alternatives. This will be further discussed under each resource in the “Environmental Consequences” section of Chapter 3.

## Description of Activities

### Commercial Vegetative Treatments (All are some form of density management or thinning)

**HIM – Improvement Cut:** This prescription may be prescribed for stands where severe insect and/or disease problems have reduced stocking levels of acceptable trees below recommended guidelines for the particular site. Due to damage or the presence of disease, the remaining trees are not capable of vigorous growth or the development of large structure is impaired. These conditions most often occur in stands that had become dominated by late-seral species with multiple canopies and dense stocking. These stands contain few trees larger than 21 inches d.b.h. Damaged or diseased trees less than 21 inches d.b.h. would be cut as well as general thinning. Merchantable trees would be sold and removed from the stand. The prescription also includes precommercial thinning where stand conditions include overstocking of non-merchantable trees. The residual stocking following treatment will be between the minimum and recommended stocking levels. Healthy seedlings and saplings may contribute significantly to the residual stocking. Healthy early-seral species would be favored although a mixture of species would remain. Residual basal area is between 25 and 40 square feet.

**HSL – Uneven-aged Management, individual tree selection:** This prescription would be used in overstocked stands with an existing component of large trees (greater than 21 inches in diameter). Current stand conditions also include multiple canopies and dense stocking and may include all seral stages. The stand would be thinned from below to recommended stocking levels. Merchantable trees would be sold and removed from the stand. Precommercial thinning would be included when stands contain large amounts of non-merchantable trees. Treatment would create immediate structure and species composition changes to larger structures and generally earlier seral conditions. Species diversity would remain but the proportion of early seral species increases. The stand would remain uneven-aged (contains two or more age classes) and would exhibit multiple canopies. Existing large trees would benefit from reduced competition and the increased growth rate in younger, smaller trees would eventually augment the number of large trees to help increase the amount of late and old structure. Residual basal area is usually greater than 60 square feet and would exceed 100 square feet if numerous trees larger than 21 inches d.b.h. are present.

**HTH – Commercial thinning:** Although commercial thinning is often specified as an intermediate treatment in even-aged silvicultural systems, in this analysis commercial thinning has been identified for stands lacking a significant component of large trees (more than 3 trees per acre over 21 inches in diameter). These stands appear even-aged with a single dominant canopy although the diameter range often includes a large number of sapling and pole-size trees. Thinning would be usually from below unless a change in species composition is desired due to dwarf mistletoe problems. Merchantable trees would be sold and removed from the stand. The prescription also includes precommercial thinning where stand conditions include overstocking of non-merchantable trees. The resulting stand would be at the recommended stocking. A small structural change may be immediately apparent and often results in earlier seral species compositions. Residual basal area is between 40 and 70 square feet.

### Logging Systems

**Skyline** – Skyline systems are usually proposed in units which have greater than 35 percent slopes. One-end suspension of logs is required. Skyline systems may be indicated for some areas with slopes less than 35 percent in order to reduce road use next to streams. Full suspension would be used over riparian areas. Cable corridors, approximately 15 feet wide, may need to be cut through an occasional stream crossing. When full suspension cannot be gained over riparian areas, logs would be pulled away from the stream to the landing. Trees felled for corridors would generally be included in the harvest (except for trees within RHCAs). Stumps, standing trees, or tractors may be used for anchors (and may be located within the RHCA but no tractors would be allowed within RHCAs unless on existing roads or closed roads). Maximum distance between skyline corridors is 150 feet. Skyline corridor placement depends on topography and may be parallel or fan out from one landing. Parallel corridors generally produce less damage to the residual trees. Landings average 1/4-acre.

**Tractor** – Tractor yarding refers to ground-based equipment and includes tractors, rubber tired skidders, and feller/bunching systems. Maximum slope is less than 35 percent and average slope is less than 20 percent. In small portions of tractor units with slopes greater than 35 percent, winch-lining of logs would be required in the timber sale contract. Winch-lining is limited to distances of less than 100 feet. Directional felling places logs closer to the skidder for yarding. Maximum downhill or contour skid distances are 1,200 feet. Optimum skidding distances are 300 to 600 feet. Skidding distances up to 1,500 feet are feasible if using a feller/buncher. When skidding distances exceed 600 feet, temporary road location may reduce site disturbance. Uphill tractor skidding is limited, usually to slopes less than 15 percent. Skid trails are laid out in parallel or branching patterns. Tractor skid trails are planned at 150 feet apart to keep area of disturbance at less than 10 percent. Existing skid trails are reused where practicable. Feller/buncher skid trails average 50 to 75 feet apart, since the booms can usually only reach 30 to 35 feet. Landing size is usually less than 1/4-acre.

**Light (horse and mobile yarder)**

**Horse Logging** - Horse logging may be selected in some units to meet specific needs. Needs may include less disturbance and tracking to protect certain resources. Skidding distances are usually shorter than in tractor systems. Maximum slope is less than 25 percent.

**Mobile yarder** - Units adjacent to streams along main roads have mobile yarding specified. Landings are small because material is loaded immediately to keep road closure reduced.

**Commercial and Noncommercial additional treatments**

**Aspen Treatments:** Where aspen occurs within proposed treatment units, treatment prescriptions would be adjusted to provide additional benefits to aspen within riparian habitat conservation areas and upland areas. This would meet the need to promote deciduous vegetative conditions in RHCAs. The project area contains numerous small aspen stands usually associated with riparian areas but sometimes are located in upland areas. Aspen develop as clones where individual trees are short-lived and replaced by sprouts from the root system. Aspen is sensitive to conifer encroachment and high stand density, over-browsing by livestock, deer and elk, and lowered water tables. Thinning of conifers would occur in aspen stands that are located within treatment units. In general, conifers younger than the mature aspen (100 years) would be cut within 50 feet of any aspen including sprouts. The conifers thinned which are merchantable would be harvested. Upland thinning treatments would benefit aspen by increasing moisture and light availability. The clones would respond by producing more sprouts and expanding in area which would strengthen overall clone health.

**Noncommercial Vegetative Treatments**

**PCT – precommercial (noncommercial) thinning:** Precommercial thinning or noncommercial thinning reduces stocking in the non-merchantable stand component (generally up to 9 inches d.b.h.). This is often prescribed in addition to commercial harvest to reduce overall stocking to recommended levels. Generally, structure or seral stages does not change from the existing situation but growth and development are promoted. Normally, the desired condition after treatment would be to have trees below 9 inches in diameter spaced approximately 18 feet apart but could range to 30 depending on the density of overstory residual trees to maximize growth. Spacing would also vary depending on the area and resource objectives such as in riparian habitat conservation areas where more trees would be left because of the desire to maintain shading on streams or less trees would be left to promote the development of broadleaf shrub and tree cover such as aspen.

**TWF – Thin with Fire:** This is identified for stands with a large component of seedlings and saplings under a canopy of much larger trees. The purpose is to reduce stocking of seedlings and saplings to maintain earlier seral stages and reduce future density problems. This prescription works best when mid-story canopies are open with few ladder fuels present in the stand.

**JUT – Juniper thinning:** Juniper thinning or noncommercial thinning reduces the amounts of younger junipers that have increased in number due to fire suppression. This prescription has been prescribed for dry ponderosa pine, western juniper woodland and steppe sites to reduce the amount of post-1900 juniper stocking. All younger trees would be cut and all old-growth junipers would be retained. This usually results in a return to the grass and shrub stage or maintains the large structural component but in more open stages. Juniper cutting increases the growth and development of grass and shrub cover.

## **Fuels Reduction Treatments**

**Prescribed Fire in general** – The objective of using prescribed fire would be to reduce surface fuels to reduce the potential intensity, suppression cost, and resistance to control of future wildfires. Prescribed fire reduces seedling and sapling densities, ladder fuels, regenerates grasses, forbs, and shrubs and reduces the encroachment of western juniper into ponderosa pine stands. Prescribed burning in RHCAs would be done to encourage deciduous hardwoods such as aspen, decrease conifer competition, and to reduce fuel loadings. Burning would take place in both the spring and fall as long as burning prescription parameters could be met. Generally, south and west slopes would be burned in the spring. North and east slopes normally do not dry out enough to conduct burning in the spring so generally burning would occur in the fall. Hand line, existing roads, major streams or other natural features will be used to keep prescribed fire within treatment units. No heavy equipment will be used to construct firelines. On slopes where erosion in the fireline could occur, water bars (a small trench to direct the flow of water off the line) would be dug into the fireline. Hand fireline would be avoided through seeps, bogs, springs, meadows, and any other wet area. Hand fireline in RHCAs would not occur within 10 feet of intermittent (Class IV) streams, and within 20 feet of perennial (Class I, II and III) streams. Where it is necessary to limit fire spread near streams or cultural resource sites, surface fuels would be cleared without disturbing the soil. Fireline construction would be minimized by using roads, major streams, rocky areas, or other existing fuel breaks. Where fuel breaks are not available, a fireline would be built. Hand fireline is constructed using hand tools, and consists of clearing a 5-10 foot wide path of seedlings, saplings, brush and downed woody debris, and removing ground fuels (litter and duff layer) down to mineral soil for a width of 1-3 feet. The width of the line depends on the fuel type the line is constructed through, with narrower line in light fuels such as grass or duff, and wider line in heavier fuels such as high loadings of downed woody material and brush. Position on the slope and topography are other factors dictating the size of the hand fireline.

**Prescribed Fire / Underburning natural fuels** – The application of fire in order to produce a desired average flame length and rate of spread for the objective of fuels consumption. Natural fuels are those fuels resulting from the natural mortality and decay of vegetation in forested and grass, forb, and shrub dominated plant associations. Hand fireline or natural features will be used to keep prescribed fire within treatment units. No heavy equipment will be used to construct firelines.

**Prescribed Fire / Underburning activity fuels** - The application of fire in order to produce a desired average flame length and rate of spread for the objective of fuels consumption. Activity fuels are those fuels resulting from a management activity such as commercial timber harvest or precommercial thinning. Hand line or natural features will be used to keep prescribed fire within treatment units. No heavy equipment will be used to construct firelines.

**Piling** - Piling slash and burning the piles is proposed where fuel loadings are expected to be too high to underburn without causing undesired effects, or to facilitate fuels reduction adjacent to the National Forest boundary. Piling increases the amount of fuels that can be treated within the project area within the lifetime (time span) of the project. Piling can occur immediately after thinning, before the fuels dry out, reducing the duration of the short-term hazard that exists after thinning. Piles would be centered in the spaces between trees in order to prevent damage to the trees when the piles are burned. Material which is rotten would not be piled. Piling usually removes 60-70 percent of the fuel in any given area, leaving the rest to maintain effective ground cover and to provide nutrients for cycling. Piles would be burned in the late fall or early winter of the second or third season after they are piled. Fire from burning piles could spread in a low-intensity underburn and creep around the forest floor between the piles. Piles would burn for varying

amounts of time, depending on the size of the piles and how dry the piles are. Hand piles and grapple piles would finish burning within a few hours; landing piles would finish burning within a few days.

**Grapple piling** – Piling slash would normally occur where fuel loadings are expected to be too high to underburn without causing undesired effects, or to facilitate fuels reduction adjacent to the National Forest boundary. Piling can occur immediately after thinning, before the fuels dry, reducing the duration of the short-term hazard that exists after thinning. Grapple piling is the use of a machine, such as an excavator with a grapple attachment on an articulating arm, for gathering and stacking slash created from management activities. Piles are normally 5-10 feet high and 10-15 feet in diameter. Piles would normally be burned in the fall. Machinery would operate on existing skid trails and not create new soil disturbance.

**Hand piling** – The use of manual labor to pile slash resulting from management actions. Piles are normally 4-6 feet high and 5-10 feet in diameter. Piles would normally be burned in the fall.

## **Road Actions**

**System Road Development, New Construction** – System roads would be constructed to access multiple harvest treatment units. All newly constructed system roads would be closed after timber sale and associated treatments have concluded. New construction would be for this treatment entry and managed for long-term intermittent use under maintenance level 1 (closed but not decommissioned). It may be necessary to cut trees over 21 inches in diameter to construct a road in a particular location to access a proposed unit or avoid damaging resources, though this would be the exception.

**Reopening of Existing Closed Roads** – These are maintenance level 1 roads which are currently inactivated and closed to motorized traffic. They are needed to access harvest units and will be opened for short-term use and closed at the conclusion of timber sale and associated treatments.

**Reconstruction of Existing Roads** – Reconstruction of existing roads would be needed to ensure that unacceptable resource damage would not occur and that the road can be safely used for log hauling. This includes but is not limited to spot rocking, brush clearing within the road prism, restoring and adding drainage structures, relocating segments of road out of RHCA's or other sensitive areas and decommissioning the old segment, and erosion control work.

**Temporary Road Development** - Timber harvest operations require the use of temporary roads in some cases. Temporary roads would be constructed to provide access to the interior of harvest units to facilitate the harvest systems. These roads would normally be built on relatively flat ground slopes (less than 15%) and would be constructed to the lowest possible standard capable of supporting log haul in order to minimize ground disturbance. In many instances, as is typical in the case of ground-based systems, individual temporary roads would be constructed along the route of previously established skid trails to minimize construction costs associated with clearing the road template. This would result in little extra disturbance within the unit beyond what would already be experienced as a result of the employment of ground-based yarding systems. In most cases, temporary roads would not cross stream channels or other unique features on the landscape. All temporary roads would be decommissioned by the timber sale purchaser after operations have concluded.

**Road Decommissioning** – Decommissioning is defined as roads that are hydrologically stabilized, blocked from motorized traffic, and removed from the road system. These roads are not needed for future use and are no longer managed or maintained for motorized use. By removing these roads from the system, they are meant to reduce the impacts of specified and temporary road construction and associated potential increases in sedimentation from roads. In addition, road densities would be reduced through decommissioning to move towards meeting LRMP standards and guidelines. All roads identified for decommissioning access units proposed for treatments and are connected to the vegetative treatments actions.

## Alternative 2 – Proposed Action

Alternative 2 is the proposed action. This alternative was developed to respond to the purpose and need of the project and focuses activities in stands with the objective to reduce stand densities, surface and ladder fuels, and the risk of stand loss to due high fuel loadings. In addition, this alternative has the objective to maintain existing desired fuel levels, increase forested stands' resiliency to insects and disease, and to treat forested stands to move towards late and old structured stand conditions.

No trees over 21 inches d.b.h., live or dead, would be cut except those necessary to remove for safety reasons or road construction.

Stands selected for commercial and noncommercial vegetative treatment reflect several structural seral stages but mostly are focused in stands with a large component of pole and small sized (under 21 inches in diameter) trees with dense stocking conditions. Most of these smaller diameter trees are shade-tolerant species that have increased in numbers in the absence of fire and would not normally be found at these high densities if fire suppression had not occurred over the last several decades. Many stands also contain large amounts of small diameter ponderosa pine under overstories of ponderosa pine and are a result of fire suppression. Reducing the stocking of the stands to the recommended stocking level allows remaining trees to capture most of the site resources without competition between trees. This reduced competition increases the rate of tree growth, both in diameter and height, increases trees' resiliency to insect and disease attacks, and increases the trees' ability to survive during adverse conditions such as drought. The objective of these treatments is to also move stands towards late and old structural stage conditions in a more rapid timeframe than would occur with no treatment. See [Map 3 Alternative 2 Commercial Treatments Only](#) and [Map 4 Alternative 2 All Treatments](#) for the locations of treatments associated with Alternative 2.

Commercial vegetative treatments on slopes less than 35 percent would be implemented with ground-based harvest systems and the activity fuels will either be treated with prescribed fire or grapple piling. On steeper slopes, such as those over 35 percent, a skyline harvest system would be employed for soil protection. In areas with concerns about using ground-based systems, horse yarding or mobile yarders would be used to reduce ground disturbance. See [Map 5 Alternative 2 Logging Systems Commercial Treatments](#) for locations of the different logging systems association with commercial harvest.

Stands selected for fuels reduction activities are either stands that have under gone some type of management and fuels are present as a result (activity fuels) or are stands that exhibit a high level of natural fuels resulting from the normal accumulations of material resulting from mortality within stands. Increased natural fuel loadings have resulted from years of fire suppression allowing the brush component and shade-tolerant seedlings and saplings to increase creating a ladder for wildfire to reach into the crowns of larger trees. In addition, fire suppression has resulted in increased down wood levels, especially in the smaller diameter size classes and deeper duff layers. In the event of a wildfire, all these factors contribute to a higher intensity fire resulting in a decreased ability for successful fire suppression activities. Additionally, in areas of higher fuel loadings, uncontrolled fire could result in damage to desirable residual trees. The objective of these treatments is to move stands towards conditions with lower fuel loadings to approximate conditions when fire occurred in lower intensities and higher frequencies.

In most cases, the objective of treatment of stands in Alternative 2 is to approximate more historical structural stage conditions, species compositions, and fire regimes that would have resulted if fire suppression over the last several decades had not occurred. The resulting conditions would reflect fire-adapted systems with more open stands; less seedling, sapling and pole sized trees; less shrubs and more herbaceous plants; and large-diameter, fire-tolerant species such as ponderosa pine and Douglas-fir. Treatments to promote conditions for other objectives were not considered, such as treatments to promote or maintain dense stand conditions for wildlife species such as the goshawk.

See [Map 6 Roads – Alternative 2](#) for the locations of roads to be constructed, reconstructed, and decommissioned. Approximately 6.6 miles of roads would need to be constructed to reach stands identified for treatment. New system roads would be closed after timber harvest and associated activities were

completed. New system road 1680152 would require installation of a stream crossing on the west fork of Shotgun Creek, a class III stream. Approximately 5.2 miles of temporary roads would need to be built within treatment units to access commercial harvested areas. The temporary roads would be decommissioned after use. Approximately 37.4 miles of existing road would be reconstructed by doing spot rocking, erosion control measures, or brush clearing within the road prism to reduce resource impacts and improve safety. All currently closed roads to be reopened would be assessed for stream crossings to ensure that adequate crossing still exists. This is done right before opening to ensure that a recent storm has not damaged a culvert. There are approximately 8 stream crossings on Class IV streams and 1 stream crossing on a Class III stream where a closed road currently exists. Approximately 10.2 miles of roads currently accessing treatment areas have been identified as no longer needed (based on the Roads Analysis) and would be decommissioned.

The following is a listing of roads to be decommissioned. Further information, such as mileage, can be found in the Roads Specialist Report.

<b>1600040</b>	<b>1600207</b>	<b>1640200</b>	<b>1700130</b>	<b>1750000</b>	<b>1750090</b>
<b>1600045</b>	<b>1600231</b>	<b>1680152</b>	<b>1700154</b>	<b>1750027</b>	<b>1750100</b>
<b>1600119</b>	<b>1620100</b>	<b>1700050</b>	<b>1700180</b>	<b>1750075</b>	<b>1750120</b>
<b>1600150</b>	<b>1640190</b>	<b>1700053</b>	<b>1700200</b>	<b>1750080</b>	<b>1750349</b>

The following is a listing of newly constructed roads that would be closed at the conclusion of timber sale and associated treatments.

<b>1610075NS1</b>	<b>1600200</b>	<b>1680152NS3</b>	<b>1700170NS1</b>	<b>1750280NS1</b>
<b>1610075NS2</b>	<b>1680152NS1</b>	<b>1680152NS4</b>	<b>1700300NS1</b>	
<b>1700302NS1</b>	<b>1680152NS2</b>	<b>1700105NS1</b>	<b>1750130NS1</b>	

**Table 2.1 Alternative 2 Summary**

<b>Fuels Treatments and Reductions (acres)</b>	
Underburn Activity Fuels	7,662
Underburn Natural Fuels	4,198
Thin with Fire	2,114
Grapple Pile	3,833
Hand Pile	79
<b>Total</b>	<b>17,886</b>
<b>Commercial Harvest (acres)</b>	
Improvement Cut	29
Commercial Thin	1,521
Uneven-aged Management, Individual Tree Selection	6,213
<b>Total</b>	<b>7,763</b>
<b>Noncommercial Vegetative Treatments (acres)</b>	
Precommercial thinning	9,039
Juniper thinning	2,688
<b>Total</b>	<b>11,728</b>
<b>Logging Systems (acres)</b>	
Tractor	5,449
Skyline	2,111
Light (horse, mobile yarder, etc.)	203
<b>Total</b>	<b>7,763</b>
<b>TOTAL TREATMENT ACRES</b> (acres of fuels treatment in some cases will overlap with commercial and noncommercial vegetative treatments)	<b>18,508</b>
<b>TOTAL PROJECT AREA ACRES</b>	<b>37,974</b>
<b>Road Management (miles)</b>	
Road Construction	6.6
Temporary Road Construction	5.2
Road Reconstruction	37.4
Road Decommissioning	10.2
<b>Estimated Volume Associated with Commercial Harvest (million board feet)</b>	<b>25.9</b>
<b>Estimated Seasonal Jobs Associated with Timber Harvest</b>	<b>411</b>
<b>Estimated Seasonal Jobs Associated with Noncommercial Thinning and Slash Treatments</b>	<b>18</b>

Note: Many of the acres in Table 2.1 are actually overlap acres. As an example, a commercial thinning unit may have precommercial thinning and grapple piling occurring within the same unit.

## Treatments by Management Area

The following table displays a summary of the proposed treatments by management area. Treatments by management areas are important to facilitate an understanding of the locations of proposed activities. Variations of the prescriptions for commercial treatments, noncommercial treatments, and prescribed fire would be used to meet management area specific resource goals and objectives and standards and guidelines. Following the table are narrative descriptions of the proposed treatments within each management area.

**Table 2.2 Alternative 2 Treatments by Management Area - Summary**

Management Area	Total Acres within Project Area	Harvest and Associated Treatments	Additional Noncommercial Treatments	Additional Prescribed Fire Treatments
Developed Recreation	371	104	16	25
Eagle Roosting Areas	124	5	50	8
General Forest	23,560	5,551	3,534	2,497
General Forest Winter Range	6,463	1,412	1,275	1,498
Hammer Creek Wildlife / Recreation Area	2,548	15	137	75
Old Growth	1,370	0	0	521
Visual Management Corridor	3,221	671	649	376
Riparian Habitat Conservation Areas	3,961	11	1,294	572
<b>TOTAL</b>	<b>37,973</b>	<b>7,763</b>	<b>5,660</b>	<b>5,000</b>

Note: Because of rounding and Geographic Information System data, acres are approximate and overlap of land allocations may occur (such as RHCA acres overlap General Forest acres), acres do not add properly. The acre figures are estimates and are used for comparisons between alternatives.

**Developed Recreation Management Area** – Approximately 145 acres of vegetative treatments would take place within and around the Antelope Reservoir Campground including commercial thinning and prescribed fire. The current stand is uneven-aged with scattered overstory ponderosa pine with a mixture of smaller ponderosa pine and western juniper trees. Stocking density of both pine and juniper is high considering the low site potential of the dry site. These treatments would be utilized to reduce competition around existing large diameter ponderosa pine and in dense clumps to reduce the stocking levels. This is needed to increase the resiliency of large diameter ponderosa pine to insect attack. Currently there are bark beetles, such as western pine beetle, mountain pine beetle, and red turpentine beetle, present in the stand causing mortality in the large-diameter ponderosa pine trees. Slash created from these operations would either be treated by hand piling concentrations or underburning. Prescribed fire would be used in such a manner as to reduce scorching of desired residual shrubs and trees.

**Eagle Roosting Area** – Approximately 63 acres of vegetative treatments would take place within this management area. Commercial thinning would occur on 5 acres near Pine Creek with the objective of removing trees less than 21 inches d.b.h. that are competing with larger ponderosa pines. This treatment would move the stands back towards structural conditions reflective of a fire climax community and increase the vigor and health of the remaining trees. Additionally, 50 acres would be noncommercially thinned and/or would use prescribed fire to reduce the numbers of juniper and conifer seedling and saplings that are currently or would in the future provide competition with the larger diameter trees. Prescribed fire only would be utilized on an additional 8 acres to reduce accumulated fuels.

**General Forest** – Approximately 5,551 acres of commercial harvest, noncommercial thinning and grapple piling would take place within this management area. An additional 3,534 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 2,497 acres to maintain and reduce fuel loadings and ladder fuels and promote forage production. The objective of treatments is to return stands to late and old structural composition with an early-seral species component by removing the understory small-diameter and shade-tolerant species, to improve the resiliency of residual trees, to reduce stand densities and promote development of additional large trees in the future.

**General Forest Winter Range** – Approximately 1,412 acres of commercial harvest, noncommercial thinning and grapple piling would take place within this management area. An additional 1,275 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 1,498 acres to maintain and reduce fuel loadings and ladder fuels. The objective of treatments is to return stands to late and old structural composition with an early seral species component by removing the understory small diameter and shade-tolerant species, to improve the resiliency of residual trees, to reduce stand densities and promote development of additional large trees in the future. Treatments would also promote forage production and availability.

**Hammer Creek Wildlife / Recreation Area** – Approximately 227 acres of vegetative treatments would take place within this management area. Commercial thinning, noncommercial thinning, and grapple piling would occur on 15 acres within the management area to remove smaller diameter trees under large diameter overstory trees. The objective is to return stands to an uneven-aged structural composition, to improve the resiliency of residual trees, and promote development of additional large trees in the future. Additionally, 137 acres would be noncommercially thinned and prescribed burned while an additional 75 acres would receive prescribed burning only. Most stands to be treated are on Mule Deer ridge and would provide a safe, wide fuel break between dense, overstocked stands within the Hammer Creek drainage and other parts of the project area.

*Note : Because **Issue 1E** is directly tied to treatments within a management area, the alternative treatments will be discussed here. The rest of the issues relative to the alternative are discussed later in this chapter.*

**Issue 1E - Old Growth Management Area** – Fuels Reduction Treatments (prescribed fire) activities within the Old Growth Management Area (2 areas) and all types of treatments in adjacent pileated woodpecker feeding areas reduce stand densities and impact the effectiveness of the old growth management area and the adjacent pileated woodpecker feeding areas.

Approximately 521 acres of prescribed burning would occur within this management area. Four old growth allocated areas are located within the project area. Only two allocated old growth areas would receive treatment (see Table 2.3). Prescribed fire would be used to reduce small diameter surface fuels and stocking of seedlings and saplings. The burning would be accomplished under conditions to meet the objectives of retaining large down wood, large trees, and snags. Additionally, seasonal restrictions would be employed for the protection of nesting raptors, such as goshawk.

**Table 2.3 Old Growth Management Area Treatments**

Allocated Old Growth Management Area	Total Acres	Prescribed Burning acreage
Sanford Spring (OG-D3-11)	293	0
Hammer Creek (OG-D3-08)	509	0
Friday Creek (OG-D3-09)	283	239
Florida Creek (OG-D3-12)	285	282
<b>Total</b>	<b>1,370</b>	<b>521</b>

The resulting condition of the Old Growth Management Area after prescribed burning would be the reduction of seedlings, saplings, and surface fuels. Attributes important to old growth, such as snags, large trees, and down wood would remain after treatment.

**Pileated Woodpecker Feeding Habitat areas** – These are 300 acre blocks of habitat adjacent to each of the Old Growth Management Areas to provide additional feeding areas for pileated

woodpeckers. Approximately 449 acres of pileated feeding habitat would be commercially thinned with associated noncommercial treatments. Canopy closure after treatment would range from 40-50 percent with small areas exceeding 50 percent. On north and east facing slopes, grand fir and Douglas-fir would have highest priority for retention. In other areas, ponderosa pine and larch would receive priority for retention. An additional 443 acres of noncommercial thinning with associated fuel treatments would occur. Prescribed fire only would occur on 37 acres. The objective for treatments would be to reduce the basal area to between 70-90 square feet per acre.

In order to use prescribed fire within an Old Growth Management Area, an LRMP amendment is needed. The amendments associated with the implementation of Alternative 2 are described at the end of the discussion for Alternative 2.

**Table 2.4 Pileated Feeding Habitat Treatments**

Pileated Feeding Habitat		Alternative 2		
Site Number	Acres	Commercial Harvest and associated Treatments	Noncommercial thinning and fuel treatments	Additional Prescribed Fire
D308	302	37	166	0
D311	328	148	110	4
D312	301	187	38	22
D309	303	77	129	11
<b>Totals</b>	<b>1,234</b>	<b>449</b>	<b>443</b>	<b>37</b>

Commercial harvest would reduce canopy closure. Canopy closure is expected to recover partially, as the growth rates and crowns of retained trees increase. However, as many of the drier sites may not be sustainable long term at these higher canopy closures, maintaining the stands may not be feasible in the long-term. Noncommercial thinning 9 inch in diameter trees and smaller alone would reduce the density of suppressed trees in the understory and result in slightly reduced levels of competition among trees. These reduced levels of competition would reduce susceptibility to invasion by insects, thereby removing the foraging substrate for pileated woodpeckers. Thinning these small trees would reduce their susceptibility to insect attack but would also promote development of larger trees in the long-term, but at a much slower rate than with commercial harvest. Prescribed burning would have similar effects as noncommercial thinning but with much more variable spacing of residual trees. The treatments would reduce the susceptibility of stands as foraging habitat for pileated woodpeckers.

**Visual Management Corridor** – Stands selected for treatments have high densities in the understory trees with increasing competition stress in the large overstory trees. Approximately 671 acres would be treated with commercial harvest, noncommercial thinning and fuel treatments in 18 separate units within visual management corridors. No commercial treatment would occur within visual corridors where RHCAs exist except for units 8, 21 and 445. These treatments are discussed in the following section Riparian Habitat Conservation Area. An additional 649 acres of noncommercial thinning and 376 acres of prescribed fire would occur. Thinning treatments would promote development of open park-like stands dominated by ponderosa pine, reduce dwarf mistletoe infected trees, maintain the presence of western larch, and remove selected conifers from aspen stands in RHCAs. Prescribed fire and grapple piling would reduce existing and created ground fuels.

**Riparian Habitat Conservation Areas (RHCAs)** – Stands selected for treatment within RHCAs have high stocking levels with multiple canopy layers and / or aspen or other deciduous vegetation at risk of replacement by conifers. Current stocking averages approximately 360 trees per acre and highest densities are at 2,000 trees per acre. Desired vegetative conditions include variable spacing, large trees providing root strength for stream bank stability, conifers of multiple age classes with full crowns providing shade, deciduous trees and shrubs, healthy aspen clones, and fuel breaks to reduce chimney effects in the event of uncontrolled fire. Treatments are designed to improve riparian habitat conditions. The following table displays the types and acres of treatment.

**Table 2.5 Treatment within Riparian Habitat Conservation Areas**

Total Riparian Habitat Conservation Area (acres)	Alternative 2 - Treatment Acres		
	Commercial Harvest	Noncommercial Thinning	Prescribed Fire
3,961	11	1,294	572

Units 8, 21, and 445 would be commercially treated within the RHCAs. The acreage of these units within the RHCAs totals 45 acres; however, the intent is not to harvest the every acre within the RHCAs.

Approximately 25 percent of each unit would be treated with commercial harvest within the RHCAs, approximately 11 acres. No heavy equipment would be utilized within the RHCAs. Units 8 and 21 would be harvested utilizing a mobile yarder system from the existing roads. Commercial timber in unit 445 would be winched to the existing road. Commercial thinning treatments would result in reduced competition allowing deciduous trees and shrubs to increase in density. Noncommercial thinning treatments and prescribed fire would also result in reduced conifer densities allowing deciduous trees and shrubs to increase.

**Key Issues Relative to Alternative 2**

**Issue 1A: Late and Old Structure** – There is a concern that all types of treatments within currently mapped late and old structure (LOS) stands would result in a change in structure and amounts of LOS across the landscape.

LOS stage forested stands occur in patches of 5 to 40 acres. These patches often occur close together in larger stands that can be identified as a complex of late and old structure intermingled with stands not meeting LOS criteria. These LOS complexes may include early, mid or late seral large trees and may have a single canopy or multiple canopies although most of the LOS is multi-strata and over stocked. The patchiness is often due to different site conditions such as changes in aspect (southern slopes are too dry to support high densities of large trees), inclusions of non-forested areas and rock outcrops. Additionally, previous fire disturbance and management activities have created gaps between LOS patches. Table 2.6 identifies the existing acres and acres treated of late and old structured stands within the project area by plant association group.

**Table 2.6 Acres of LOS Stands Existing and Treated by Plant Association Group**

Plant Association Group	Number of stands	Existing Acres	Treated Acres	Percent of Acreage Treated
Dry Grand Fir	18	202	117	58
Douglas-fir	15	174	41	24
Moist Ponderosa Pine	2	23	22	100
Dry Ponderosa Pine	3	30	30	100
Juniper Woodland	28	308	107	35
<b>Totals</b>	<b>66</b>	<b>737</b>	<b>317</b>	<b>43</b>

Additionally, the following table describes the type of treatment within LOS that would occur with the implementation of Alternative 2.

**Table 2.7 Treatments in LOS, All Plant Association Groups**

Harvest and Associated Treatment Acres	Noncommercial Thinning and Associated Fuels Treatments	Prescribed Burning acres	Total Acres Treated
157	86	74	317

Commercial treatments are designed to maintain large trees by changing LOS from multi-strata to single-strata conditions although these stands would continue to have an uneven-aged (uneven-sized) structure. Harvest prescriptions retain the historic characteristics of LOS with groups of younger and older trees intermingled throughout the stands maintaining structural diversity. Treatments are designed to reduce understory canopy layers, thus reducing competition stress in the older, larger overstory. Many large trees, both inside and outside LOS complexes, exhibit low vigor from long-term competition stress. Large trees in treated LOS would persist longer than in untreated LOS. Due to the number of large trees, treated LOS would retain basal areas at the high

end of recommended stocking which means that the effects of treatment will not last as long or produce as much growth as stands with lower densities. All stands would remain LOS after commercial harvest.

Table 2.8 displays the current levels of LOS and the projected levels of LOS at 20 and 50 years. The projection model utilizes consistent growth rates for classes of density conditions, species composition, size and age class so that comparison of the alternatives can be made. At 20 years post treatment for all plant association groups described, percentages of LOS increase over the No Action alternative but are still below historic range of variability.

**Table 2.8 Comparison and Projection of LOS for the Existing Condition and Alternative 2**

Plant Association Group	Time Period	LOS Type	Existing Condition	Alternative 2	HRV
Dry Grand Fir	Current Level or Immed. Post Treatment	Multi-Strata	1.6%	1.1%	8-15%
		Single-Strata	2.3%	3.1%	18-38%
		Total	3.9%	4.2%	26-53%
	20 years Post Treatment	Multi-Strata	8.1%	8.5%	8-15%
		Single-Strata	4.4%	9.9%	18-38%
		Total	12.5%	18.4%	26-53%
	50 years Post Treatment	Multi-Strata	18.5%	20.1%	8-15%
		Single-Strata	6.5%	16.8%	18-38%
		Total	25.0%	36.8%	26-53%
Douglas-Fir	Current Level or Immed. Post Treatment	Multi-Strata	1.4%	1.0%	11-19%
		Single-Strata	2.7%	3.4%	33-54%
		Total	4.1%	4.4%	44-73%
	20 years Post Treatment	Multi-Strata	7.0%	7.7%	11-19%
		Single-Strata	5.1%	9.3%	33-54%
		Total	12.1%	17.0%	44-73%
	50 years Post Treatment	Multi-Strata	16.7%	19.1%	11-19%
		Single-Strata	7.5%	15.8%	33-54%
		Total	24.3%	34.9%	44-73%
Moist Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.6%	0.4%	0-9%
		Single-Strata	1.2%	1.7%	50-86%
		Total	1.8%	2.1%	50-95%
	20 years Post Treatment	Multi-Strata	3.5%	3.2%	0-9%
		Single-Strata	3.7%	5.7%	50-86%
		Total	7.2%	8.9%	50-95%
	50 years Post Treatment	Multi-Strata	9.6%	9.3%	0-9%
		Single-Strata	5.7%	10.5%	50-86%
		Total	15.3%	19.8%	50-95%
Dry Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.5%	0.3%	0-7%
		Single-Strata	1.1%	1.8%	25-59%
		Total	1.6%	2.1%	25-66%
Juniper woodland	Current Level or Immed. Post Treatment	Multi-Strata	0.3%	0.2%	0%
		Single-Strata	0.4%	0.9%	5-12%
		Total	0.7%	1.1%	5-12%
Juniper Steppe	Current Level or Immed. Post Treatment	Multi-Strata	0.0%	0.0%	0%
		Single-Strata	0.2%	0.3%	5-12%
		Total	0.2%	0.3%	5-12%

Noncommercial thinning and prescribed burning outside of commercial harvest units would not remove any trees over 9 inches in diameter in the LOS stands and would result in an average spacing of approximately 18 feet in the smaller diameter trees. More variability of spacing would result with prescribed burning. There would be no change from the current condition in numbers and spacing of trees

larger than 9 inches d.b.h. All stands would remain LOS after noncommercial thinning and prescribed burning.

**Issue 1B: Connective Corridor treatments** – There is a concern that the commercial harvest treatments within the connectivity corridors between the Old Growth Management Areas as prescribed by the Eastside Screens would result in reduced canopy closure in dense stands within the corridors. This may not promote habitat conditions that would facilitate species movement between areas and would make species vulnerable to predation and or exposure or block movement of species with limited mobility because of reduced densities of stands. See Map 16 Wildlife Emphasis for locations of connective corridors.

There are connective corridors linking four Old Growth Management Areas and LOS stands in 2 or 3 different ways within the project area. The limited amount of LOS existing in the project area requires corridors to be longer than the desired 1.5 miles. The width of corridors is limited by previous management activities such as overstory removal and less than 400 feet between regeneration harvest units. Physical restrictions such as ridges, meadows and low productivity ground result in major changes in plant associations also limit connectivity. For example, an old growth stand located on a dry grand fir site would not be well connected by a corridor crossing a low site potential ponderosa pine stand. Treatments would maintain existing large trees while removing smaller diameter understory trees. Canopy closures would be reduced to between 40 to 50 percent to promote growth. Treatments would be designed to reduce competition between trees and reduce future rates of mortality.

**Table 2.9 Acres of Treatment within Connectivity Corridors**

Total Acres Within Corridors	Harvest and Associated Treatment Acres	Precommercial Thinning and Juniper Thinning Acres	Prescribed Burning acres	Total Acres Treated
800	232	111	70	413

Commercial treatments are focused in stands with canopy closures greater than 50 percent. Treatments would reduce the canopy closure to less than 50 percent to promote the development of large diameter trees. Corridors would continue to be dominated by medium to large diameter trees but would have fewer trees less than 12 inches in diameter. Noncommercial thinning and prescribed fire treatments would reduce the understory tree densities but would not alter the overstory densities. Within these areas, vertical complexity and canopy closures would be reduced in the short-term and but would still provide adequate cover structure to facilitate travel by most species that use these corridors. Species that select for more open forest conditions would find this habitat more favorable after treatment. However, treated corridors would be less desirable for species that have limited mobility, that are vulnerable to predation or select for denser stand conditions.

**Issue 1C: Goshawk Habitat Treatments** – There is a concern that treatment activities that reduce stand densities will affect goshawk post-fledging habitat. Commercial thinning treatments would reduce stand densities and these desired characteristics.

There are 14 nest core and post-fledging areas within the West Maurys project area. Of these nesting territories, six had confirmed nesting records during the period 2001 to 2003, six were confirmed as active nests in 1998 or 1999, and two were last confirmed as active nests during, or prior to, 1990. Nest cores and post fledging areas (PFA) have been mapped around or adjacent to known goshawk nesting sites. Goshawks utilize mixed conifer forest stands with relatively high canopy closure. Patchy crown density and horizontal diversity of forest conditions are important components of habitat for goshawks. No harvest or noncommercial thinning treatments would occur within the 30-acre nest core areas. Approximately 95 percent of all post fledging areas are dominated by trees greater than 9 inches in diameter with 68 percent of the area having three or more trees per acre greater than 21 inches in diameter. Seventeen percent of the post fledging areas have more than 10 trees per acre greater than 21 inches in diameter. Treatments would occur within 10 of the 400-acre post fledging areas surrounding the nest core sites. Treatments in these areas are designed to maintain and develop large tree structure and adjust densities to more historic levels. Understory thinning (commercial harvest) and juniper thinning would occur on 18 acres of LOS within post fledging areas. Approximately 2,600 acres of post fledging habitat with high stocking levels with multiple canopies,

variable stocking, and intermingled branches would not be treated. The following table displays acres treated by treatment type within post fledging areas.

**Table 2.10 Acres of Treatment within Goshawk Post Fledging Areas (Alternative 2)**

Post Fledging Area	Existing Post Fledging Area (acres)	Harvest and Associated Treatment (acres)	Percent Commercially Treated	Noncommercial Thinning and Juniper Thinning (acres)	Prescribed Burning (acres)	Total acres Treated and (Percent Treated)	
0937 PFA	418	72	1-25	1	232	305	(50-75%)
0938 PFA	402	81	1-25	63	174	318	(50-75%)
0940 PFA	355	0	0	0	0	0	(0%)
0941 PFA	398	0	0	166	94	260	(50-75%)
0944 PFA	439	113	25-50	9	0	122	(25-50%)
5028 PFA	480	124	25-50	27	104	255	(50-75%)
5029 PFA	417	0	0	43	201	244	(50-75%)
5030 PFA	418	272	>65	81	5	358	(75-99%)
5031 PFA	404	0	0	0	0	0	(0%)
5032 PFA	408	1	0	6	0	7	(1-25%)
5081 PFA	392	84	1-25	33	28	154	(25-50%)
5082 PFA	446	159	25-50	20	114	293	(50-75%)
5084 PFA	418	160	25-50	90	165	415	(75-99%)
5091 PFA	421	0	0	40	0	40	(1-25%)
Totals	5,817	1,066	18%	579	1,117	2,762	47%

Commercial harvest would reduce canopy closure in the stands to 40-50 percent with small areas exceeding 50 percent. Noncommercial thinning and prescribed burning would reduce understory densities and would reduce hiding cover. Commercial harvest exceeding 50 percent of any post fledging area would likely remove hiding cover for goshawks and has the potential to displace birds. This occurs on one post fledging area. Total treatment of any post fledging area exceeding 75 percent would result in canopy closure reductions in excess of recommended levels for post fledging areas and would render them unsuitable. This occurs on two post fledging areas.

**Issue 1D: Elk security / cover / calving treatments** – There is a concern that commercial harvest, thinning, and fuels reduction activities would have a detrimental impact on elk, including security, cover, and calving habitat within the project area.

Table 2.11 displays the existing condition and acres treated by Alternative 2 for all measuring factors associated with this issue.

**Table 2.11 Summary of Habitat Effectiveness Index for Selected Management Areas and Cover**

General Forest (Summer Range)	Goal	Existing Condition		Alternative 2 Treatments
Cover (acres)		Marginal	11,032	2,557
		Satisfactory	2,131	885
		Total	13,163	3,442 (9,721 remaining in cover)
Open Road Density (miles / square mile)	3.0	2.42		2.33
Percent Cover	15	56		36
HEI Value	28	38		42
General Forest Winter Range	Goal	Existing Condition		Alternative 2 Treatments
Cover (acres)		Marginal	3,045	1,040
		Satisfactory	428	218
		Total	3,473	1,258 (2,215 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	1.39		1.29
Percent Cover	7	54		34
HEI Value	6	50		51

Hammer Creek Wildlife and Recreation	Goal	Existing Condition		Alternative 2 Treatments
Cover (acres)		Marginal	1,364	14
		Satisfactory	539	11
		Total	1,903	25 (1,878 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	.47		.47
Percent Cover	8	74		74
HEI Value	6	46		46

**Table 2.12 Summary of Acres of Alternative Treatments in Elk Calving and Security Habitat**

Acres		Alternative 2			
		Harvest and Associated Treatments	Noncommercial Treatments	Prescribed Burning	Total Treated
Elk Calving	3,599	846	363	190	1,399
Elk Security Habitat	3,410	435	447	394	1,276

This alternative would commercially harvest 846 acres within elk calving areas, noncommercially thin 363 acres, and burn natural fuels on 190 acres within mapped elk calving areas. Areas with a road density of less than 2 miles/square mile have been identified as potential elk security habitat. This alternative commercially harvests 435 acres in elk security habitat. This alternative proposes noncommercial thinning in 447 acres, and natural fuels burning in 394 acres in elk security habitat.

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced in General Forest (GF) and General Forest Winter Range (GFWR). The percentage of total cover comprised of satisfactory cover would be reduced, however the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in GF, but would be reduced in GFWR. Forage to cover ratios would be closer to optimal (60% forage to 40% cover) in GF, but further from optimal in GFWR. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR.

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 23% of the elk security area. Elk calving habitat would be treated (39% of the area) to reduce density of coniferous cover which could improve the condition of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas and therefore could lead to displacement of animals.

**Issue 2: Water Yield** - Vegetation management would affect water yield by increasing the rate of water delivery to streams. Since peak flows now occur earlier than they did historically, water flow from higher elevations is “flashier” and can coincide with peak flows from lower elevations. Timber harvest and noncommercial vegetation treatment decreases leaf area index and can lead to increased water yields and changes in the timing of flows.

No watershed EHA results in levels exceeding 35 EHA. Newsome and Gibson Creek drainages do not exceed 20 EHA. Water yields would increase but not significantly due to lack of treatments that reduce the amount of vegetative cover. Table 2.13 displays the equivalent harvest area percents for Newsome and Gibson Creek drainages. A further description of the EHA levels is included in Chapter 3.

**Table 2.13 Equivalent Harvest Area Percentages for Alternative 2**

Watershed	Alternative	2004	2005	2006	2007	2008	2009	2010	2011	2012
Newsome Creek Drainage	2		17.2	17.3	18.1	17.6	17.1	16.5	15.8	15.1
Gibson Creek Drainage	2		9.4	13.5	17.4	17.3	17.1	16.5	15.6	14.8

**LRMP Amendments Associated with Alternative 2** During the evaluation of the proposed action against current management direction, it was found that certain areas and treatments were not consistent with Eastside Screen direction and the Ochoco National Forest Land and Resource Plan. The following is a discussion of the direction, the treatments considered inconsistent, the description, and rationale for the LRMP amendment.

**#1 - Eastside Screens** – The Eastside Screens include standards that when LOS is currently below the historic range of variability, then commercial harvest is not permitted. Because commercial harvest treatment is proposed in LOS stands when below the historical range of variability for both multi-strata and single-strata conditions, an LRMP amendment is needed to implement these actions. The Eastside Screens were intended to maintain options for future management of LOS and only apply to timber sales. The proposed commercial thinning treatments are designed to reduce tree density and improve growth of the residual trees, enhance forest health, or recover potential mortality resulting from inter-tree competition. Thinning would more quickly restore historic seral/structural stage conditions and improve growing conditions for larger trees than either no action or prescribed fire alone. Thinning contributes to the primary purposes of fuel treatment: decreasing the probability of crown fires, decreasing the severity of the impacts, enhancing effectiveness and safety, and reducing costs. While there may be short-term decreases in stand densities and wildlife species dependent on those higher density stands would have reduced habitat, the longer-term maintenance of LOS into the future is desirable. Habitat for those species that are dependent on more open forest canopy conditions would be improved. No trees over 21 inches d.b.h. would be cut and removed in any area except in isolated cases for safety reasons or for road construction.

There would be 157 acres of LOS treated with commercial harvest utilizing the individual tree selection harvest prescription. All LOS treated, would remain LOS after treatment though the majority of acres treated would change from multi-strata to single-strata conditions.

**#2 – Eastside Screens** – The Eastside Screens include standards that when all the criteria for connective corridor habitat cannot be met, then timber harvest should be deferred in connective corridors. Not all stands in connective corridors meet the canopy closure requirements and not all corridors meet the minimum width of 400 feet therefore harvest should be deferred. Corridors do represent the best connections given the exiting conditions resulting from physical restrictions such as ridges, meadows, and previous harvest practices. Timber harvest treatments in Alternative 2 in stands with canopy closures greater than 50 percent are designed to maintain existing large trees and promote development of additional large trees. Treatments will help develop late and old structured condition in corridors and would therefore improve connectivity in the long term. Stand densities in the understory layers would be reduced to increase the health and vigor of remaining trees. Noncommercial activities are allowed in connective corridors under Eastside Screens.

There would be 232 acres of connective corridor treatment with commercial thinning and individual tree selection. Canopy closures in these stands would be reduced to below 50 percent but would still function as connective corridor habitat for species associated with more open conditions. Those species selecting for more dense conditions would be more affected by treatment.

**#3 Ochoco Land and Resource Management Plan (LRMP)** – Current LRMP direction is contradictory. The LRMP describes that prescribed fire will normally not be applied in old growth,

but where it can be supported by research, directives, and desired condition, it can be utilized following appropriate environmental analysis (LRMP p. 4-136). Additionally, when unacceptable damage to resources on adjacent lands or to the old growth resource could occur from insects or diseases, prescribed fire may be used to reduce stand densities and competition that will increase the resiliency of residual large diameter trees (LRMP p. 4-152). However, under habitat management, the LRMP states that vegetation management would not be allowed until further research is available on the needs of the dependent species (LRMP p. 4-251).

The Old Growth Management Area (OG-D3-09 (283 acres)) located in Friday Creek contains a mosaic of site potential ranging from juniper woodland to Douglas-fir. A small patch of late and old structure is present on the east side in the Douglas-fir plant association group. The remaining area has variable species composition and structure but does not contain sufficient large trees to meet the LOS criterion. The area contains both multi-strata and single-strata canopy conditions. Stocking of seedling, sapling and poles is reduced due to pre-1989 thinning. This has resulted in reduced ladder fuels but excessive surface fuels. Stocking is still high for the site potential with the result that growth is slow and trees are susceptible to bark beetle mortality. Loss of large trees would probably occur before additional trees grow larger than 21 inches in diameter. An active goshawk nest is located on the northern edge near Friday Creek. Much of the area has been designated as goshawk post fledging habitat.

The Old Growth Management Area (OG-D3-12 (285 acres)) located in the Florida Creek drainage contains site potentials identified as mostly dry grand fir and Douglas-fir. The overstory is a mixture of ponderosa pine and Douglas-fir. Small patches meeting the LOS criterion for large trees occur within this Allocated Old Growth. This stand is dense with three well-defined canopy layers. Due to the existing high density, mortality of large trees has been increasing in recent years. Surface fuel loading is variable but overall high levels coupled with ladder fuels create high fire hazard. Fire ignition within this area during hot, dry and windy conditions would be difficult to stop and would result in loss of old-growth habitat.

There would be 521 acres of prescribed fire utilized in the 2 Old Growth Areas to reduce surface and ladder fuels. There would be 239 acres treated in Friday Creek and 282 acres treated in Florida Creek.

### **Alternative 3**

Alternative 3 is developed from the proposed action and is adjusted to be responsive to the issues raised during scoping as discussed in Chapter 1. The alternative is responsive to the wildlife issues by not treating many of the stands with habitat for the identified species or by adjusting treatment prescriptions as discussed below. In addition, acres treated have been reduced in certain watersheds to reduce impacts to watershed conditions. Many of the stands deferred from harvest to meet wildlife issues also contributed to reducing impacts to water yield. This alternative still focuses activities in stands with the objective to reduce stand densities, hazardous fuels and the risk of stand loss due to high fuel loadings, maintain existing desired fuel levels, to increase forested stands' resiliency to insects and disease, and to treat forested stands to move towards late and old structured stand conditions.

No trees over 21 inches d.b.h., live or dead, would be cut except those necessary to remove for safety reasons or road construction.

#### **Wildlife**

**Issue 1A - Late and Old Structure** – No commercial treatments would occur within stands currently mapped as LOS in blocks of 5 or more acres.

**Issue 1B - Connectivity Corridors** – No commercial treatments would occur within connective corridors.

**Issue 1C - Goshawk Habitat Treatments - post fledging areas** – No more than 50 percent of any designated individual post fledging area would be commercially treated. No more than 60 percent of any designated individual post fledging area would be treated including all treatment types. Harvest prescriptions in post fledging areas would be modified to promote intermingled crowns in 12 inches in diameter and larger trees with patchy clumps of more dense, less dense, and small openings scattered throughout the stands.

**Issue 1D - Elk Security, Cover and Calving Habitat** – No treatments would occur in stands currently providing high quality cover as defined as greater than 70 percent crown closure within elk security habitat.

**Issue 1E - Old Growth Management Area Friday Creek (OG-D3-09)** – No treatments would occur in this management area.

**Pileated feeding habitat** – No treatments would occur in currently suitable pileated woodpecker habitat within grand fir sites with more than 3 trees per acre greater than 21 inches in diameter. The strategy of this alternative would focus on developing habitat on sites that have the highest potential to sustain higher tree densities and mixed species composition such as grand fir sites. Commercial treatment prescriptions would be adjusted to retain additional co-dominant trees in stands to maintain multi-strata and dense stand conditions. Most treatments are deferred in other pileated feeding habitat areas. Stands would be managed for mid-seral species composition on grand fir and Douglas-fir sites. This prescription is designed to promote the development of pileated woodpecker habitat in pileated feeding habitat areas where it does not currently exist, or to maintain it where it is present.

There would be no treatments in an area of upper Pine Creek where pileated woodpeckers have been sited and is currently providing suitable habitat. This is within the General Forest Management Area.

## **Water Yield**

**Issue 2 – Water Yield** – Due to the sensitivity for increased flows, approximately 800 acres of tractor and skyline units would not be harvested in the Headwaters Bear Creek subwatershed. This would result in a 25 percent reduction in new EHA effects. The following units would not be harvested: 253, 384, 410.2, 411, 483, 533, 563, 569, 578, 591, 598, and 601 to reduce the potential for increases in water yield. Further information on EHA effects can be found in Chapter 3.

Stands selected for commercial and noncommercial vegetative treatment reflect several structural seral stages but mostly are focused in stands with a large component of pole and small sized (under 21 inches in diameter) trees with dense stocking conditions. Parameters for stand selection are identical to Alternative 2 except for deferring treatment in stands meeting wildlife or watershed objectives. See the discussion under Alternative 2 for further information on parameters for stand selection for treatment. The objective of these treatments is to reduce hazardous fuel conditions, increase forested stands' resiliency to insects and disease, and move stands towards late and old structural stage conditions in a more rapid timeframe than would occur with no treatment. See [Map 7 Alternative 3 Commercial Treatments](#) and [Map 8 Alternative 3 All Treatments](#) for the locations of treatments associated with Alternative 3.

Commercial vegetative treatments on slopes less than 35 percent are implemented with ground-based harvest systems and the activity fuels will either be treated with prescribed fire or grapple piling. On steeper slopes, such as those over 35 percent, a skyline harvest system would be employed for soil protection. In areas with concerns about using ground-based systems, horse yarding or mobile yarders would be used to reduce ground disturbance. This is identical to Alternative 2. See [Map 9 Alternative 3 Logging Systems Commercial Treatments](#) for the locations of the logging systems for the commercial treatment units.

Stands selected for fuels reduction activities are either stands that have under gone some type of management and fuels are present as a result (activity fuels) or are stands that exhibit a high level of natural fuels resulting from the normal accumulations of material resulting from mortality within stands. Parameters for stand selection are identical to Alternative 2 with the exception of not treating stands to meet wildlife or watershed objectives. The objective of these treatments is to move stands towards conditions with less fuel loadings to approximate conditions when fire occurred in lower intensities and higher frequencies.

In most cases, the objective of treatment of stands in Alternative 3 is to approximate more historical structural stage conditions, species compositions, and fire regimes that would have resulted if fire suppression over the last several decades had not occurred. The resulting conditions would reflect fire-adapted systems with more open stands; less seedling, sapling and pole sized trees; less shrubs; more herbaceous plants; and large-diameter, fire-tolerant species such as ponderosa pine and Douglas-fir. In some cases, treatments proposed in Alternative 2 were deferred in Alternative 3 because of wildlife or watershed issues.

See [Map 10 Roads – Alternative 3](#) for the locations of roads to be constructed, reconstructed and decommissioned. Approximately 3.3 miles of specified roads would need to be constructed to reach stands identified for treatment. Newly constructed system roads would be closed after timber harvest and associated activities were completed. New system road 1680152 would require installation of a stream crossing on the west fork of Shotgun Creek, a class III stream. Approximately 4.3 miles of temporary roads would need to be built within treatment units to access commercial harvested areas. The temporary roads would be decommissioned after use. Approximately 34.1 miles of existing road would be reconstructed by doing spot rocking, erosion control measures, or brush clearing within the road prism to reduce resource impacts and improve safety. All currently closed roads to be reopened would be assessed for stream crossings to ensure that adequate crossing still exists. This is done right before opening to ensure that a recent storm has not damaged a culvert. There are approximately 7 stream crossings on Class IV streams where a closed road currently exists. Approximately 8.8 miles of roads have been identified as no longer needed (based on Roads Analysis) and would be decommissioned

The following is a listing of roads to be decommissioned. Further information can be found in the Roads Specialist Report.

<b>1600040</b>	<b>1600231</b>	<b>1700050</b>	<b>1750000</b>	<b>1750090</b>
<b>1600045</b>	<b>1620100</b>	<b>1700053</b>	<b>1750027</b>	<b>1750100</b>
<b>1600119</b>	<b>1640190</b>	<b>1700130</b>	<b>1750075</b>	<b>1750120</b>
<b>1600150</b>	<b>1680152</b>	<b>1700180</b>	<b>1750080</b>	<b>1750349</b>

The following is a listing of newly constructed roads that would be closed at the conclusion of timber sale and associated treatment activities.

<b>1610075NS1</b>	<b>1680152NS4</b>	<b>1700170NS1</b>	<b>1750130NS1</b>
<b>1610075NS2</b>	<b>1700105NS1</b>	<b>1700300NS1</b>	

**Table 2.14 Alternative 3 Summary**

<b>Fuels Treatments and Reductions (acres)</b>	
Underburn Activity Fuels	6,071
Underburn Natural Fuels	3,234
Thin with Fire	1,364
Grapple Pile	2,621
Hand Pile	80
<b>Total</b>	<b>13,370</b>
<b>Commercial Harvest (acres)</b>	
Improvement Cut	29
Commercial Thin	1,502
Uneven-aged Management, Individual Tree Selection	3,956
<b>Total</b>	<b>5,487</b>
<b>Noncommercial Vegetative Treatments (acres)</b>	
Precommercial thinning	6,628
Juniper thinning	2,477
<b>Total</b>	<b>9,104</b>
<b>Logging Systems (acres)</b>	
Tractor	4,319
Skyline	931
Light (horse, mobile yarder, etc.)	238
<b>Total</b>	<b>5,487</b>
<b>TOTAL TREATMENT ACRES</b> (acres of fuels treatment in some cases will overlap with commercial and noncommercial vegetative treatments)	<b>14,404</b>
<b>TOTAL PROJECT AREA ACRES</b>	<b>37,974</b>
<b>Road Management (miles)</b>	
Road Construction	3.3
Temporary Road Construction	4.3
Road Reconstruction	34.1
Road Decommissioning	8.8
<b>Estimated Volume Associated with Commercial Harvest (million board feet)</b>	<b>16.0</b>
<b>Estimated Seasonal Jobs Associated with Timber Harvest</b>	<b>254</b>
<b>Estimated Seasonal Jobs Associated with Noncommercial Thinning and Slash Treatments</b>	<b>14</b>

Note: Many of the acres above are actually overlap acres. As an example, a commercially thinning unit may have precommercial thinning and grapple piling occurring on the same acres.

## Treatments by Management Area

The following table displays a summary of the proposed treatments by management area. Treatments by management areas are important to facilitate an understanding of the locations of proposed activities. Variations of the prescriptions for commercial treatments, noncommercial treatments, and prescribed fire would be used to meet management area specific resource goals and objectives and standards and guidelines. Following the table are narrative descriptions of the proposed treatments within each management area.

**Table 2.15 Alternative 3 Treatments by Management Area**

<b>Management Area</b>	<b>Total Acres within Project Area</b>	<b>Harvest and Associated Treatments (acres)</b>	<b>Additional Noncommercial Treatments (acres)</b>	<b>Additional Prescribed Fire Treatments (acres)</b>
Developed Recreation	371	104	16	13
Eagle Roosting Areas	124	5	50	0
General Forest	23,560	3,931	3,184	2,077
General Forest Winter Range	6,463	784	1,137	1,051
Hammer Creek Wildlife / Recreation Area	2,548	0	55	75
Old Growth	1,370	0	0	0
Visual Management Corridor	3,221	651	578	325
RHCAs	3,961	11	933	432
<b>TOTAL</b>	<b>37,973</b>	<b>5,487</b>	<b>5,021</b>	<b>3,553</b>

Note: Because of rounding and GIS data, acres are approximate and overlap of land allocations may occur (such as RHCA acres overlap General Forest acres). Acres do not add properly. The acre figures are estimates and are used for comparisons between alternatives.

**Developed Recreation Management Area** – Approximately 133 acres of vegetative treatments would take place within and around the Antelope Reservoir Campground including commercial thinning and prescribed fire. The current stand is uneven-aged with scattered overstory ponderosa pine with a mixture of smaller ponderosa pine and western juniper trees. Stocking density of both pine and juniper is high considering the low site potential of the dry site. Treatments would be utilized to reduce competition around existing large-diameter ponderosa pine and in dense clumps to reduce the stocking levels. This is needed to increase the resiliency of large diameter ponderosa pine to insect attack. Currently, there are bark beetles, such as western pine beetle, mountain pine beetle, and red turpentine beetle, present in the stand causing mortality in the large-diameter ponderosa pine trees. Slash created from these operations would either be treated by hand piling concentrations or underburning. Prescribed fire would be used in such a manner as to reduce scorching of desired residual shrubs and trees.

**Eagle Roosting Area** – Approximately 55 acres of vegetative treatments would take place within this management area. Commercial thinning would occur on 5 acres near Pine Creek with the objective of removing trees under 21 inches that are competing with larger ponderosa pines. This treatment would move the stands back towards structural conditions reflective of a fire climax community and increase the vigor and health of the remaining trees. Additionally, 50 acres would be noncommercially thinned and/or prescribed fire would be used to reduce the numbers of juniper and conifer seedling and saplings that provide competition with the larger diameter trees.

**General Forest** – Approximately 3,931 acres of commercial harvest, noncommercial thinning and grapple piling would take place within this management area. An additional 3,184 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 2,077 acres to maintain and reduce fuel loadings and ladder fuels. The objective of treatments is to return stands to late and old structural composition with an early-seral component by removing the understory small-diameter and shade-tolerant species, to improve the resiliency of residual trees, to reduce stand densities, and to promote development of additional large trees in the future.

**General Forest Winter Range** – Approximately 784 acres of commercial harvest, noncommercial thinning, and grapple piling would take place within this management area. An additional 1,137 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 1,051 acres to maintain and reduce fuel loadings and ladder fuels. The objective of treatments is to return stands to

late and old structural composition with an early-seral component by removing the understory small-diameter and shade-tolerant species, to improve the resiliency of residual trees, to reduce stand densities, and to promote development of additional large trees in the future. Treatments would also promote forage production and availability.

**Hammer Creek Wildlife / Recreation Area** – Approximately 130 acres of noncommercial vegetative treatments would take place within this management area. The objective is to return stands to an uneven-aged structural composition, to improve the resiliency of residual trees, and promote development of additional large trees in the future. Approximately 55 acres would be noncommercially thinned and prescribed burned while an additional 75 acres would receive prescribed burning only. Most stands to be treated are on Mule Deer ridge and would provide a safe, wide fuel break between dense, overstocked stands within the Hammer Creek drainage and other parts of the project area.

*Note: Because Issue 1E is directly tied to treatments within a management area, the alternative treatments will be discussed here. The rest of the issues relative to the alternative are discussed later in this chapter.*

**Issue 1E. - Old Growth Management Area** – No prescribed burning would occur within the old growth management area. There would be no change from the current condition.

**Table 2.16 Old Growth Management Area Treatments**

Allocated Old Growth Management Area	Total Acres	Prescribed Burning acreage
Sanford Spring (OG-D3-11)	293	0
Hammer Creek (OG-D3-08)	509	0
Friday Creek (OG-D3-09)	283	0
Florida Creek (OG-D3-12)	285	0
<b>Total</b>	<b>1,370</b>	<b>0</b>

**Pileated Woodpecker Feeding Habitat areas** – These are 300-acre blocks of habitat adjacent to each of the Old Growth Management Areas to provide additional feeding areas for pileated woodpeckers. Grand fir sites with canopy closure greater than 50 percent and with more than 3 trees per acre greater than 21 inches d.b.h. would not be treated at this time in order to maintain existing suitable habitat conditions. Harvest would occur on 117 acres that have less than 3 trees per acres greater than 21 inches d.b.h.

An area in the upper Pine Creek drainage (Management Area General Forest) would not be harvested where more suitable habitat is currently available for pileated woodpeckers. This alternative also proposes to noncommercially thin (and associated fuels treatment) an additional 359 acres in the designated pileated feeding habitat. There would be an additional 15 acres of fuel treatment outside of thinning units within the pileated feeding habitat.

**Table 2.17 Pileated Feeding Habitat Treatments**

Pileated Feeding Habitat		Alternative 3		
Site Number	Acres	Commercial Harvest and associated Treatments (acres)	Noncommercial thinning and fuel treatments (acres)	Additional Prescribed Fire (acres)
D308	302	12	69	0
D311	328	98	160	4
D312	301	6	27	0
D309	303	0	103	11
<b>Totals</b>	<b>1,234</b>	<b>116</b>	<b>359</b>	<b>15</b>

Commercial treatments in pileated feeding habitat would promote the development of large trees and snags in stands and would be focused in grand fir stands where the potential to develop suitable habitat is the highest. Noncommercial thinning 9-inch and smaller d.b.h. trees would reduce the density of suppressed trees in the understory and result in slightly reduced levels of competition

among trees. These reduced levels of competition would reduce susceptibility to invasion by insects, thereby removing the foraging substrate for pileated woodpeckers. Thinning these small trees would reduce their susceptibility to insect attack but would also promote development of larger trees in the long-term, but at a much slower rate than with commercial harvest. Prescribed burning would have similar effects as noncommercial thinning but with much more variable spacing of residual trees. The treatments would reduce the susceptibility of stands as foraging habitat for pileated woodpeckers.

**Visual Management Corridor** – Stands selected for treatments have high densities in the understory trees with increasing competition stress in the large overstory trees. Approximately 651 acres would be treated with commercial harvest, noncommercial thinning, and fuel treatments within the visual management corridors. No commercial treatment would occur within visual corridors where RHCAs exist except for units 8, 21, and 445. These treatments are discussed in the following section RHCA. An additional 578 acres of noncommercial thinning and 325 acres of prescribed fire would occur. Thinning treatments would promote development of open park-like stands dominated by ponderosa pine, reduce dwarf mistletoe infected trees, maintain the presence of western larch, and remove selected conifers from aspen stands. Prescribed fire and grapple piling would reduce existing and created ground fuels.

**Riparian Habitat Conservation Areas (RHCAs)** – Stands selected for treatment within RHCAs have high stocking levels with multiple canopy layers and / or aspen or other deciduous vegetation at risk of replacement by conifers. Current stocking averages approximately 360 trees per acre and highest densities are at 2,000 trees per acre. Desired vegetative conditions include variable spacing, large trees providing root strength for stream bank stability, conifers of multiple age classes with full crowns providing shade, deciduous trees and shrubs, healthy aspen clones, and fuel breaks to reduce chimney effects in the event of uncontrolled fire. The following table displays the types and acres of treatment.

**Table 2.18 Treatment within Riparian Habitat Conservation Areas**

Total Riparian Habitat Conservation Area Acres	Alternative 3 - Treatment Acres		
	Commercial Harvest	Noncommercial Thinning	Prescribed Fire
3,961	11	933	432

Units 8, 21, and 445 would be commercially treated within the RHCAs. The acreage of these units within the RHCAs totals 45 acres; however, the intent is not to harvest every acre within the RHCAs. Approximately 25 percent of each unit would be treated with commercial harvest within the RHCAs, approximately 11 acres. No heavy equipment would be utilized within the RHCAs. Units 8 and 21 would be harvested utilizing a mobile yarder system from the existing roads. Commercial timber in unit 445 would be winched to the existing road. Commercial thinning treatments would result in reduced competition allowing deciduous trees and shrubs to increase in density. Noncommercial thinning treatments and prescribed fire would also result in reduced conifer densities allowing deciduous trees and shrubs to increase.

**Key Issues Relative to Alternative 3**

**Issue 1A: Late and Old Structure** – There is a concern that all types of treatments within currently mapped late and old structured stands (LOS) would result in a change in structure and amounts of LOS across the landscape.

**Table 2.19 Acres of LOS Stands Existing and Treated by Plant Association Group**

Plant Association Group	Number of stands	Existing (acres)	Treated (acres)	Percent of Acreage Treated
Dry Grand Fir	18	202	20	10%
Douglas-fir	15	174	30	17%
Moist Ponderosa Pine	2	23	5	22%
Dry Ponderosa Pine	3	30	16	53%
Juniper Woodland	28	308	67	22%
<b>Totals</b>	<b>66</b>	<b>737</b>	<b>138</b>	<b>19%</b>

Additionally, the following table describes the type of treatment within LOS that would occur with the implementation of Alternative 3.

**Table 2.20 Treatments in LOS, All Plant Association Groups**

Harvest and Associated Treatment Acres	Noncommercial Thinning and Associated Fuels Treatments	Prescribed Burning acres	Total Acres Treated
0	89	49	138

There would be no commercial harvest in LOS stands with this alternative. All stands would remain LOS after noncommercial thinning and prescribed burning, with most stands maintaining the current multi-strata conditions.

**Table 2.21** displays the current levels of LOS and the projected levels of LOS at 20 and 50 years. The projection model utilizes consistent growth rates for classes of density conditions, species composition, size and age class so that comparison of the alternatives can be made. At 20 years post treatment for all plant association groups described, percentages of LOS increase over the No Action alternative but are still below historic range of variability.

**Table 2.21 Comparison and Projection of LOS for the Existing Condition and Alternative 3**

Plant Association Group	Time Period	LOS Type	Existing Condition	Alternative 3	HRV
Dry Grand Fir	Current Level or Immed. Post Treatment	Multi-Strata	1.6%	1.4%	8-15%
		Single-Strata	2.3%	2.8%	18-38%
		Total	3.9%	4.2%	26-53%
	20 years Post Treatment	Multi-Strata	8.1%	8.2%	8-15%
		Single-Strata	4.4%	7.4%	18-38%
		Total	12.5%	15.6%	26-53%
	50 years Post Treatment	Multi-Strata	18.5%	19.0%	8-15%
		Single-Strata	6.5%	11.9%	18-38%
		Total	25.0%	30.9%	26-53%
Douglas-fir	Current Level or Immed. Post Treatment	Multi-Strata	1.4%	1.1%	11-19%
		Single-Strata	2.7%	3.3%	33-54%
		Total	4.1%	4.4%	44-73%
	20 years Post Treatment	Multi-Strata	7.0%	7.1%	11-19%
		Single-Strata	5.1%	5.9%	33-54%
		Total	12.1%	13.0%	44-73%
	50 years Post Treatment	Multi-Strata	16.7%	17.4%	11-19%
		Single-Strata	7.5%	8.4%	33-54%
		Total	24.3%	25.8%	44-73%
Moist Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.6%	0.5%	0-9%
		Single-Strata	1.2%	1.6%	50-86%
		Total	1.8%	2.1%	50-95%
	20 years Post Treatment	Multi-Strata	3.5%	3.1%	0-9%
		Single-Strata	3.7%	5.1%	50-86%
		Total	7.2%	8.2%	50-95%
	50 years Post Treatment	Multi-Strata	9.6%	8.9%	0-9%
		Single-Strata	5.7%	9.4%	50-86%
		Total	15.3%	18.3%	50-95%
Dry Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.5%	0.3%	0-7%
		Single-Strata	1.1%	1.8%	25-59%
		Total	1.6%	2.1%	25-66%
Juniper woodland	Current Level or Immed. Post Treatment	Multi-Strata	0.3%	0.2%	0%
		Single-Strata	0.4%	0.8%	5-12%
		Total	0.7%	1.0%	5-12%
Juniper Steppe	Current Level or Immed. Post Treatment	Multi-Strata	0.0%	0.0%	0%
		Single-Strata	0.2%	0.3%	5-12%
		Total	0.2%	0.3%	5-12%

**Issue 1B: Connective Corridor treatments** – There is a concern that the commercial harvest treatments within the connectivity corridors between the Old Growth Management Areas as prescribed by the Eastside Screens would result in reduced canopy closure in dense stands within the corridors. This may not

promote habitat conditions that would facilitate species movement between areas and would make species vulnerable to predation and/or exposure or block movement of species with limited mobility because of reduced densities of stands. See Map 16 Wildlife Emphasis for locations of connective corridors.

There would be no commercial treatments within connective corridors with this alternative.

**Table 2.22 Acres of Treatment within Connectivity Corridors**

Total Acres Within Corridors	Harvest and Associated Treatment (acres)	Noncommercial Thinning and Juniper Thinning (acres)	Prescribed Fire (acres)	Total Acres Treated
800	0	20	39	59

Noncommercial thinning and prescribed fire treatments would result in less vertical complexity in trees 9 inches in diameter and smaller but canopy closures in the larger diameter trees where they currently exist would still provide adequate cover to facilitate travel by most species that use these corridors. Species that select for more open forest conditions would find this habitat more favorable after treatment on these 59 acres but the majority of connective corridor would not change from the existing condition in the short term.

**Issue 1C: Goshawk Habitat Treatments** – There is a concern that treatment activities that reduce stand densities will affect goshawk post-fledging habitat. Commercial thinning treatments would reduce stand densities and these desired characteristics.

Nest cores and post fledging areas (PFA) have been mapped around or adjacent to known goshawk nesting sites. Goshawks utilize mixed-conifer forest stands with relatively high canopy closure. Patchy crown density and horizontal diversity of forest conditions are important components of habitat for goshawks. No harvest or noncommercial thinning treatments would occur within the 30-acre nest core areas. Prescribed fire would only be allowed within the 30-acre nest core areas if burn conditions and fuel loads do not pose a risk of crown fire in the nest stands and prescribed fire is proposed adjacent to core nest areas. Currently approximately 95 percent of all post fledging areas are dominated by trees greater than 9 inches d.b.h. with 68 percent of the area having three or more trees per acre greater than 21 inches in diameter. Seventeen percent of the post fledging areas have more than 10 trees per acre greater than 21 inches d.b.h. Treatments would occur within 10 of the 400-acre post fledging areas surrounding the nest sites. Treatments in these areas are designed to maintain and develop large tree structure and adjust densities to more historic levels. Understory thinning (commercial harvest) and juniper thinning would occur on 18 acres of LOS within post fledging areas. Harvest and associated precommercial thinning treatments would be modified to maintain a higher level of crown intermingling than in Alternative 2. Approximately 3,100 acres with high stocking levels, multiple canopies, and intermingled branches would not be treated. The following table displays acres treated by treatment type within post fledging areas. There are a total of 5,817 acres of post fledging habitat identified within the project area.

Table 2.23 Acres of Treatment within Goshawk Post Fledging Areas (Alternative 3)

Post Fledging Area	Existing Post Fledging Area (acres)	Harvest and Associated Treatment (acres)	Percent Commercially Treated	Noncommercial Thinning and Juniper Thinning Associated Fuels Treatments (acres)	Prescribed Burning (acres)	Total acres Treated and (Percent Treated)	
						Acres	(Percent Treated)
0937 PFA	418	70	1-25	0	88	158	(25-50%)
0938 PFA	402	76	1-25	50	35	161	(25-50%)
0940 PFA	355	0	0	0	1	0	(0%)
0941 PFA	398	0	0	76	94	170	(25-50%)
0944 PFA	439	113	25-50	9	0	113	(25-50%)
5028 PFA	480	124	25-50	27	56	207	(25-50%)
5029 PFA	417	0	0	43	39	82	(50-60%)
5030 PFA	418	188	1-25	36	3	227	(50-60%)
5031 PFA	404	0	0	0	0	0	(0%)
5032 PFA	408	1	0	6	0	7	(1-25%)
5081 PFA	392	84	1-25	33	28	145	(25-50%)
5082 PFA	446	105	1-25	20	109	234	(50-60%)
5084 PFA	418	0	0	54	120	174	(25-50%)
5091 PFA	421	0	0	40	0	40	(1-25%)
Totals	5,817	761	13%	394	573	1,728	30%

Commercial harvest treatments would be designed to maintain or promote habitat conditions for goshawks. Commercial treatments would remove understory trees with the result of having more open space for flight under the canopy. This alternative would not commercially harvest more than 50 percent of any post-fledging area or treat with additional noncommercial and prescribed burning treatments on more than 60 percent of any post-fledging area. This alternative would not reduce hiding cover excessively or result in displacement of existing pairs.

**Issue 1D: Elk security / cover / calving treatments** – There is a concern that commercial harvest, thinning, and fuels reduction activities would have a detrimental impact on elk, including security, cover and calving habitat within the project area.

**Table 2.24 Summary of Habitat Effective Index for Selected Management Areas and Cover**

<b>General Forest (Summer Range)</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 3 Treatments</b>
Cover (acres)		Marginal	11,032	2,270
		Satisfactory	2,131	482
		Total	13,163	2,752 (10,411 remaining in cover)
Open Road Density (miles / square mile)	3.0	2.42		2.33
Percent Cover	15	56		44
HEI Value	28	38		43
<b>General Forest Winter Range</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 3 Treatments</b>
Cover (acres)		Marginal	1,040	983
		Satisfactory	218	102
		Total	3,473	1,085 (2,388 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	1.39		1.35
Percent Cover	7	54		37
HEI Value	6	50		52
<b>Hammer Creek Wildlife and Recreation</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 3 Treatments</b>
Cover (acres)		Marginal	1,364	7
		Satisfactory	539	5
		Total	1,903	12 (1,891 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	.47		.47
Percent Cover	8	74		74
HEI Value	6	46		46

**Table 2.25 Summary of Acres of Alternative Treatments in Elk Calving and Security Habitat**

<b>Acres</b>		<b>Alternative 3</b>			
		<b>Harvest and Associated Treatments</b>	<b>Noncommercial Treatments</b>	<b>Prescribed Burning</b>	<b>Total Treated</b>
Elk Calving	3,599	629	236	190	1,055
Elk Security Habitat	3,410	73	412	267	752

This alternative would commercially harvest 629 acres within elk calving areas, non-commercially thin 236 acres, and burn natural fuels on 190 acres. Areas with a road density of less than 2 miles/square mile have been identified as potential elk security habitat. This alternative commercially harvests 73 acres in elk security habitat. This alternative proposes non-commercial thinning in 412 acres, and natural fuels burning in 267 acres in elk security habitat.

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced in General Forest (GF) and General Forest Winter Range (GFWR). In GF and GFWR the percentage of total cover comprised of satisfactory cover would be reduced; however, the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in GF and in GFWR. Forage to cover ratios would be optimal (60% forage to 40% cover) in GF and near optimal in GFWR. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR.

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 9% of the elk security area. Elk calving habitat would be treated (29% of the area) to reduce density of coniferous cover which could improve the condition of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas and therefore could lead to displacement of animals.

**Issue 2: Water Yield -** Vegetation management would affect water yield by increasing the rate of water delivery to streams. Since peak flows now occur earlier than they did historically, water flow from higher elevations is “flashier” and can coincide with peak flows from lower elevations. Timber harvest and noncommercial vegetation treatment decreases leaf area index and can lead to increased water yields and changes in the timing of flows.

No watershed EHA results in levels exceeding 35 EHA. Newsome and Gibson Creeks drainages do not exceed 20 EHA. Water yields would increase slightly but not significantly due to the type of vegetative treatments proposed. More vegetative cover is maintained in this alternative than Alternative 2 therefore water yields are slightly reduced in this alternative. A further description of the EHA levels is included in Chapter 3.

**Table 2.26 Equivalent Harvest Area Percentages for Alternative 3**

Watershed	Alternative	2004	2005	2006	2007	2008	2009	2010	2011	2012
Newsome Creek Drainage	3		16.7	16.2	16.5	16.1	15.6	15.1	14.6	14.0
Gibson Creek Drainage	3		9.1	12.8	16.5	16.4	16.2	15.8	15.2	14.4

## Sale Area Improvement Opportunities – Alternatives 2 and 3

Opportunities to improve sale area conditions can be funded through Knutson-Vanderberg (KV) Act funding. This funding utilizes monies generated by the timber sale receipts to reforest or restore conditions resulting from timber sale activities. Note, since Alternative 4 does not propose commercial harvest, there would be no potential sale area improvement opportunities.

**Roads** – Roads identified for decommissioning that are associated with treatment units would be decommissioned either with the purchaser following harvest treatments or after post harvest treatments are completed utilizing KV funds. Roads identified for closure would be closed by the purchaser following harvest treatments or after post harvest treatments are completed utilizing KV funds.

**Recreation** – Several trails are within or adjacent to treatment units. Units in Alternative 2 with trails are Unit 253 (HSL), Unit 193 (Fuels reduction), Unit 101.1 and 101.2 (Fuels reduction). Only 1 unit (193) has a trail through the unit in Alternative 3. Additional treatments may be necessary to return trails to conditions existing prior to treatment. Antelope Campground is within treatment units and may need further rehabilitative measures. The environmental consequences of these treatments will be discussed in Chapter 3 of this document.

**Noxious weeds** – the potential exists for the introduction or spread of noxious weeds within the sale area because of increased soil disturbance and unintended transport of weeds even under prevention measures. Parameters for preventing the introduction and spread have been incorporated into the action alternatives. Surveys during and after implementation of this project would be needed to quickly locate new infestations and recommend control treatment measures. No treatment would be authorized under this decision. A new decision would need to be done to treat new weed populations found during these surveys. The implications will be discussed in Chapter 3 of this document.

**Wildlife** – In prescribed burning areas within treatment units where aspen occurs, surveys would be done to determine the need for short-term protection from grazing and browsing. If a fence was needed for short-term protection, a new environmental analysis would be completed.

## Alternative 4

This alternative was developed to respond partially to the purpose and need of the project without the use of commercial harvest. This alternative focuses activities in stands with the objective to reduce hazardous fuels and the risk of stand loss to due high fuel loadings, maintain existing desired fuel levels, slightly increase forested stands' resiliency to insects and disease, and to increase growth rates in smaller diameter stands. Because commercial harvest would not occur with this alternative, the Eastside Screens' ecosystem or wildlife standards do not apply to this alternative.

No trees over 9 inches d.b.h. would be cut, or in the isolated cases of damaged or diseased trees, no trees above 12 inches d.b.h. would be cut.

Stands selected for treatment reflect several structural seral stages but mostly are focused in stands with a large component of pole and small sized (under 21 inches in diameter) trees with dense stocking conditions. Many of these smaller diameter trees are young trees of shade-tolerant species that have increased in numbers in the absence of fire and would not normally be found at these high densities if fire suppression had not occurred over the last several decades. Many stands also contain large amounts of small diameter ponderosa pine under overstories of ponderosa pine and are a result of fire suppression. Reducing the stocking of the stands allows remaining trees to capture most of the site resources but with this alternative, competition between trees in the larger diameters still remains. Greatest improvements in growth rates would be realized in stands without a larger number of trees over 9 inches d.b.h.

Stands selected for fuels reduction activities are either stands that have under gone some type of management and fuels are present as a result (activity fuels from noncommercial thinning) or are stands that exhibit a high level of natural fuels resulting from the normal accumulations of material from mortality within stands. Increased natural fuel loadings have resulted from years of fire suppression allowing the brush component in some cases and seedlings and saplings to increase creating a ladder for wildfire to reach into the crowns of larger trees. In addition, fire suppression has resulted in increased down wood levels, especially in the smaller diameter size classes, and deeper duff layers. In the event of a wildfire, all these factors contribute to a higher intensity fire resulting in a decreased ability for successful fire suppression activities. Additionally, in areas of higher fuel loadings, uncontrolled fire could result in damage to desirable residual trees. The objective of these treatments is to move stands towards conditions with lower fuel loadings to approximate conditions when fire occurred in lower intensities and higher frequencies. In those stands with high densities of trees in the 9 to 21-inch d.b.h. trees, there would be a small incremental reduction of fuel loadings, especially in surface fuels, but ladder fuels and high crown closures would leave the stands susceptible to increased mortality resulting from wildfire. See [Map 11 Alternative 4 All Treatments](#) for locations of treatments associated with Alternative 4.

In most cases, the objective of treatment of stands in Alternative 4 is to towards more historical structural stage conditions, species compositions, and fire regimes that would have resulted if fire suppression over the last several decades had not occurred without using commercial harvest. In stands with high densities of trees in the 9 to 21-inch d.b.h. range, conditions would remain similar to Alternative 1 with little gains in increased growth rates and development of large trees even with thinning of the smaller diameter trees. Smaller diameter stands where noncommercial treatments such as thinning in stands with little to no overstory or larger diameter trees would still benefit and result in increased growth rates.

See [Map 12 Roads – Alternative 4](#) for the locations of roads to be decommissioned. There would be no new system road construction, road reconstruction, or temporary road construction with this alternative. Approximately 10.2 miles of roads currently accessing treatment areas have been identified as no longer needed (based on the Roads Analysis) and would be decommissioned.

The following is a listing of roads to be decommissioned. Further information, such as mileage for each road segment, can be found in the Roads Specialist Report.

1600040	1600207	1640200	1700130	1750000	1750090
1600045	1600231	1680152	1700154	1750027	1750100
1600119	1620100	1700050	1700180	1750075	1750120
1600150	1640190	1700053	1700200	1750080	1750349

**Table 2.27 Alternative 4 Summary**

<b>Fuels Treatments and Reductions (acres)</b>		
Underburn Activity Fuels		7,662
Underburn Natural Fuels		3,941
Thin with Fire		2,114
Grapple Pile		2,638
Hand Pile		79
	<b>Total</b>	<b>16,407</b>
<b>Commercial Harvest (acres)</b>		
	<b>Total</b>	<b>0</b>
<b>Noncommercial Vegetative Treatments (acres)</b>		
Precommercial thinning		9,039
Juniper thinning		2,688
	<b>Total</b>	<b>11,727</b>
<b>Logging Systems (acres)</b>		
	<b>Total</b>	<b>0</b>
<b>TOTAL TREATMENT ACRES</b> (acres of fuels treatment in will overlap with most noncommercial vegetative treatments)		<b>17,047</b>
<b>TOTAL PROJECT AREA ACRES</b>		<b>37,974</b>
<b>Road Management (miles)</b>		
Road Decommissioning		10.2
<b>Estimated Volume Associated with Commercial Harvest (million board feet)</b>		<b>0 MMBF</b>
<b>Estimated Seasonal Jobs Associated with Timber Harvest</b>		<b>0</b>
<b>Estimated Seasonal Jobs Associated with Noncommercial Thinning and Slash Treatments</b>		<b>17</b>

Note: Many of the acres above are actually overlap acres. As an example, a noncommercial thinning unit may have grapple piling occurring and within the same unit.

## Treatments by Management Area

The following table displays a summary of the proposed treatments by management area. Treatments by management areas are important to facilitate an understanding of the locations of proposed activities. Variations of the prescriptions for noncommercial treatments and prescribed fire would be used to meet management area specific resource goals and objectives and standards and guidelines. Following the table are narrative descriptions of the proposed treatments within each management area.

**Table 2.28 Alternative 4 Treatments by Management Area**

<b>Management Area</b>	<b>Total Acres within Project Area</b>	<b>Harvest and Associated Treatments (acres)</b>	<b>Additional Noncommercial Treatments (acres)</b>	<b>Additional Prescribed Fire Treatments (acres)</b>
Developed Recreation	371	0	79	67
Eagle Roosting Areas	124	0	50	8
General Forest	23,560	0	7,844	2,947
General Forest Winter Range	6,463	0	3,316	1,051
Hammer Creek Wildlife / Recreation Area	2,548	0	152	74
Old Growth	1,370	0	0	0
Visual Management Corridor	3,221	0	1,145	494
Riparian Habitat Conservation Areas	3,961	0	1,300	501
<b>TOTAL</b>	<b>37,973</b>	<b>0</b>	<b>12,586</b>	<b>4,641</b>

Note: Because of rounding and GIS data, acres are approximate and overlap of land allocations may occur (such as RHCA acres overlap General Forest acres), acres do not add properly. The acre figures are estimates and are used for comparisons between alternatives.

**Developed Recreation Management Area** – Approximately 146 acres of vegetative treatments would take place within and around the Antelope Reservoir Campground including noncommercial thinning and prescribed fire. These treatments would be utilized to reduce competition in small diameter trees around existing large diameter ponderosa pine and in dense clumps to reduce the stocking levels. This is needed to increase the resiliency of large diameter ponderosa pine to insect attack. Currently there are bark beetles, such as western pine beetle, mountain pine beetle, and red turpentine beetle, present in the stand causing mortality in the large-diameter ponderosa pine trees. While some incremental gains would be made in reducing stand densities, trees 9 inches d.b.h. and above would remain. This would maintain the existing large diameter trees in the short term. Slash created from these operations would either be treated by hand piling concentrations or underburning. Prescribed fire would be used in such a manner as to reduce scorching of desired residual shrubs and trees.

**Eagle Roosting Area** – Approximately 50 acres would be noncommercially thinned and/or would use prescribed fire to reduce the numbers of juniper and conifer seedling and saplings that are currently or would in the future provide competition with the larger diameter trees. Thinning treatments would be slightly less effective in reducing risk to overstory roost trees because larger trees contributing to competition among trees would not be removed. Prescribed fire only would be utilized on an additional 8 acres to reduce accumulated fuels and return fire to the ecosystem.

**General Forest** – Approximately 7,844 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 2,947 acres to maintain and reduce surface fuel loadings and ladder fuels. The objective of treatments is to reduce stand densities in the 9-inch.d.b.h. and smaller trees for incremental improvements in reducing competition among trees and reductions in surface and ladder fuels.

**General Forest Winter Range** – Approximately 3,316 acres of noncommercial treatments and associated fuels reductions would occur. Prescribed fire would occur on 1,051 acres to maintain and reduce surface fuel loadings and ladder fuels. The objective of treatments is to reduce stand densities in the 9-inches d.b.h. and smaller trees for incremental improvements in reducing competition among trees and reductions in surface and ladder fuels.

**Hammer Creek Wildlife / Recreation Area** – Approximately 152 acres would be noncommercially thinned with associated fuels treatments while an additional 74 acres would receive prescribed burning only. Most stands to be treated are on Mule Deer ridge and would move towards providing a safe, wide fuel break between dense, overstocked stands within the Hammer Creek drainage and other parts of the project area. Conditions in stands with high densities of trees larger than 9 inches d.b.h. would still exist and would not provide as safe or effective fuelbreak.

*Note: Because **Issue 1E** is directly tied to treatments within a management area, the alternative treatments will be discussed here. The rest of the issues relative to the alternative are discussed later in this chapter.*

**Issue 1E - Old Growth Management Area** – Fuels Reduction Treatments (prescribed fire) activities within the Old Growth Management Area (2 areas) and all types of treatments in adjacent pileated woodpecker feeding areas reduce stand densities and impact the effectiveness of the old growth management area and the adjacent pileated woodpecker feeding areas.

Under this alternative, no prescribed fire would occur in the old growth management areas (see Table 2.29).

**Table 2.29 Old Growth Management Area Treatments**

Allocated Old Growth Management Area	Total Acres	Prescribed Burning acreage
Sanford Spring (OG-D3-11)	293	0
Hammer Creek (OG-D3-08)	509	0
Friday Creek (OG-D3-09)	283	0
Florida Creek (OG-D3-12)	285	0
<b>Total</b>	<b>1,370</b>	<b>0</b>

There would be no change to the Old Growth Management Areas vegetative conditions as compared to the existing conditions. Attributes important to old growth, such as snags, large trees, and down wood would still remain.

**Pileated Woodpecker Feeding Habitat areas** – The objective for treatments would be to reduce densities in the smaller diameter trees while also reducing surface fuels and a smaller amount of ladder fuels. Approximately 890 acres of noncommercial thinning with associated fuel treatments would occur. Prescribed fire only would occur on 7 acres.

**Table 2.30 Pileated Feeding Habitat Treatments**

Pileated Feeding Habitat		Alternative 4		
Site Number	Acres	Commercial Harvest and Associated Treatments	Noncommercial thinning and fuel treatments	Additional Prescribed Fire
D308	302	0	202	0
D311	328	0	258	4
D312	301	0	225	2
D309	303	0	205	1
<b>Totals</b>	<b>1,234</b>	<b>0</b>	<b>890</b>	<b>7</b>

Canopy closures in stands with trees larger than 9 inches d.b.h. would be expected to remain similar to existing conditions and those above 50 percent canopy closure would still provide habitat for pileated woodpeckers. Noncommercial thinning of trees less than 9 inches d.b.h. would reduce the density of suppressed trees in the understory and result in a slightly reduced level of competition among trees. These reduced levels of competition would reduce slightly the susceptibility to invasion by insects, thereby maintaining the foraging substrate for pileated woodpeckers. The rate of development of large diameter trees would be greatly reduced with thinning only the 9-inch d.b.h. trees and less because these stands contain a large component of trees greater than 9 inches d.b.h. Therefore, long-term development of large diameter trees would probably not be achieved on the majority of acres. Prescribed burning would have similar effects as noncommercial thinning but with

much more variable spacing of residual trees. More residual trees would be damaged by the prescribed burning and potentially more snags would be created in the denser stands.

**Visual Management Corridor** – Stands selected for treatments have high densities in the understory trees with increasing competition stress in the large overstory trees. Approximately 1,145 acres of noncommercial thinning and associated fuels treatments and 494 acres of prescribed fire would occur. Thinning treatments would reduce densities in trees less than 9 inches d.b.h., but would not promote the development of open park-like stands dominated by ponderosa pine. Density of trees larger than 9 inches d.b.h. would not be changed and would maintain existing dense stands conditions in these larger diameter trees. Prescribed fire and grapple piling would reduce existing and activity generated surface fuels and smaller diameter ladder fuels.

**Riparian Habitat Conservation Areas (RHCAs)** – Stands selected for treatment within RHCAs have high stocking levels with multiple canopy layers and/or aspen or other deciduous vegetation at risk of replacement by conifers. Current stocking averages approximately 360 trees per acre and highest densities are at 2,000 trees per acre. Desired vegetative conditions include variable spacing, large trees providing root strength for stream bank stability, conifers of multiple age classes with full crowns providing shade, deciduous trees and shrubs, healthy aspen clones, and fuel breaks to reduce chimney effects in the event of uncontrolled fire.

**Table 2.31 Treatment within RHCAs**

Total RHCA Acres	Alternative 4 - Treatment Acres		
	Commercial Harvest	Noncommercial Thinning	Prescribed Fire
3,961	0	1,300	501

Treatments are designed to improve riparian habitat conditions but with emphasis on thinning trees 9 inches d.b.h. and less. Approximately 1,300 acres of noncommercial thinning and associated fuels treatments and 501 acres of prescribed fire would occur. The densities of conifers would be reduced to provide less competition for increased growth of desirable deciduous vegetation. Noncommercial thinning treatments and prescribed fire would result in reduced conifer densities allowing deciduous trees and shrubs to increase.

**Key Issues Relative to Alternative 4**

**Issue 1A: Late and Old Structure** – There is a concern that all types of treatments within currently mapped LOS stands would result in a change in structure and amounts of LOS across the landscape.

Table 2.32 identifies the existing acres and acres treated of late and old structured stands within the project area by plant association group.

**Table 2.32 Acres of Late and Old Structured Stands (LOS) Existing and Treated by Plant Association Group**

Plant Association Group	Number of stands	Existing Acres	Treated Acres	Percent of Acreage Treated
Dry Grand Fir	18	202	88	44%
Douglas-fir	15	174	11	6%
Moist Ponderosa Pine	2	23	22	100%
Dry Ponderosa Pine	3	30	30	100%
Juniper Woodland	28	308	107	35%
<b>Totals</b>	<b>66</b>	<b>737</b>	<b>258</b>	<b>43%</b>

Additionally, the following table describes the type of treatment within LOS that would occur with the implementation of Alternative 4.

**Table 2.33 Treatments in LOS, All Plant Association Groups**

Harvest and Associated Treatment Acres	Noncommercial Thinning and Associated Fuels Treatments	Prescribed Burning acres	Total Acres Treated
0	230	28	258

Noncommercial treatments are designed to reduce understory canopy layers, thus realizing a small incremental decrease in competition stress in the older, larger overstory trees. Noncommercial treatments would not decrease density sufficiently to allow continued growth and vigor of the overstory trees. This would reduce the rate of development of large diameter trees and would limit the expansion of LOS across the landscape. Many large trees, both inside and outside LOS complexes, exhibit low vigor from long-term competition stress. Large trees in treated LOS would persist longer than in untreated LOS but still would be susceptible to mortality arising from overly dense conditions in the larger diameter trees. Table 2.34 displays the current levels and projected levels of LOS for all plant association groups and compares them to the historic range of variability for multi-strata and single-strata LOS.

**Table 2.34 Comparison and Projection of LOS for the Existing Condition and Alternative 4**

Plant Association Group	Time Period	LOS Type	Existing Condition	Alternative 4	HRV
Dry Grand Fir	Current Level or Immed. Post Treatment	Multi-Strata	1.6%	1.6%	8-15%
		Single-Strata	2.3%	2.4%	18-38%
		Total	3.9%	4.0%	26-53%
	20 years Post Treatment	Multi-Strata	8.1%	8.3%	8-15%
		Single-Strata	4.4%	5.0%	18-38%
		Total	12.5%	13.2%	26-53%
	50 years Post Treatment	Multi-Strata	18.5%	19.1%	8-15%
		Single-Strata	6.5%	8.0%	18-38%
		Total	25.0%	27.1%	26-53%
Douglas-Fir	Current Level or Immed. Post Treatment	Multi-Strata	1.4%	1.3%	11-19%
		Single-Strata	2.7%	3.0%	33-54%
		Total	4.1%	4.3%	44-73%
	20 years Post Treatment	Multi-Strata	7.0%	7.1%	11-19%
		Single-Strata	5.1%	5.3%	33-54%
		Total	12.1%	12.4%	44-73%
	50 years Post Treatment	Multi-Strata	16.7%	16.9%	11-19%
		Single-Strata	7.5%	8.0%	33-54%
		Total	24.3%	24.9%	44-73%
Moist Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.6%	0.5%	0-9%
		Single-Strata	1.2%	1.5%	50-86%
		Total	1.8%	2.0%	50-95%
	20 years Post Treatment	Multi-Strata	3.5%	3.2%	0-9%
		Single-Strata	3.7%	4.3%	50-86%
		Total	7.2%	7.5%	50-95%
	50 years Post Treatment	Multi-Strata	9.6%	9.6%	0-9%
		Single-Strata	5.7%	6.0%	50-86%
		Total	15.3%	15.6%	50-95%
Dry Pine	Current Level or Immed. Post Treatment	Multi-Strata	0.5%	0.5%	0-7%
		Single-Strata	1.1%	1.6%	25-59%
		Total	1.6%	2.1%	25-66%
Juniper woodland	Current Level or Immed. Post Treatment	Multi-Strata	0.3%	0.2%	0%
		Single-Strata	0.4%	0.8%	5-12%
		Total	0.7%	1.0%	5-12%
Juniper Steppe	Current Level or Immed. Post Treatment	Multi-Strata	0.0%	0.0%	0%
		Single-Strata	0.2%	0.3%	5-12%
		Total	0.2%	0.3%	5-12%

In noncommercial thinning stands, there would be no trees larger than 9 inches cut in LOS stands. Thinning would remove smaller trees with variable spacing dependent on existing larger diameter trees. There would be no change from the current condition in numbers and spacing of trees larger than 9 inches d.b.h. A higher risk of damage and mortality would result with prescribed burning in these stands in the larger diameter trees. All stands would remain LOS after noncommercial thinning and prescribed burning activities.

**Issue 1B: Connective Corridor treatments** – There is a concern that the commercial harvest treatments within the connectivity corridors between the Old Growth Management Areas as prescribed by the Eastside Screens would result in reduced canopy closure in dense stands within the corridors. This may not

promote habitat conditions that would facilitate species movement between areas and would make species vulnerable to predation and or exposure or block movement of species with limited mobility because of reduced densities of stands. See Map 16 Wildlife Emphasis for locations of connective corridors.

Treatments would maintain existing large trees while removing smaller diameter understory trees. Canopy closures would be reduced to between 40 to 50 percent to promote growth. Treatments would be designed to reduce competition between trees and reduce future rates of mortality.

**Table 2.35 Acres of Treatment within Connectivity Corridors**

Total Acres Within Corridors	Harvest and Associated Treatment Acres	Noncommercial Thinning and Juniper Thinning Acres	Prescribed Burning acres	Total Acres Treated
800	0	322	87	409

There would be no commercial treatments within corridors. Corridors would continue to be dominated by medium to large diameter trees where they currently exist but would have fewer trees 9 inches and less d.b.h. Within these areas, vertical complexity and canopy closures would be reduced in the short-term and but would still provide adequate cover structure to facilitate travel by most species that use these corridors. Species that select for more dense forest conditions would find this habitat similar after treatment, though slightly less dense.

**Issue 1C: Goshawk Habitat Treatments** – There is a concern that treatment activities that reduce stand densities will affect goshawk post-fledging habitat. Commercial thinning treatments would reduce stand densities and these desired characteristics.

Nest cores and post fledging areas (PFA) have been mapped around or adjacent to known goshawk nesting sites. Goshawks utilize mixed conifer forest stands with relatively high canopy closure. Patchy crown density and horizontal diversity of forest conditions are important components of habitat for goshawks. No harvest or noncommercial thinning treatments would occur within the 30-acre nest core areas. Prescribed fire would only be allowed within the 30-acre nest core areas if burn conditions and fuel loads do not pose a risk of crown fire in the nest stands and prescribed fire is proposed adjacent to core nest areas. Approximately 95 percent of all post fledging areas are dominated by trees greater than 9 inches d.b.h. with 68 percent of the area having three or more trees per acre greater than 21 inches d.b.h. Seventeen percent of the post fledging areas have more than 10 trees per acre greater than 21 inches d.b.h. Treatments would occur within 10 of the 400-acre post fledging areas surrounding the nest core sites. Treatments in these areas are designed to maintain and develop large tree structure and adjust densities to more historic levels. Understory thinning and juniper thinning would occur on 18 acres of LOS within post fledging areas. Approximately 2,600 acres of post fledging habitat with high stocking levels with multiple canopies, variable stocking and intermingled branches would not be treated. The following table displays acres treated by treatment type within post fledging areas. There are a total of 5,817 acres of post fledging habitat identified within the project area.

**Table 2.36 Acres of Treatment within Goshawk Post Fledging Areas (Alternative 4)**

Post Fledging Area	Existing Post Fledging Area (acres)	Harvest and Associated Treatment (acres)	Percent Commercially Treated	Noncommercial Thinning and Associated Fuels Treatments (acres)	Prescribed Burning (acres)	Total acres Treated and (Percent Treated)	
0937 PFA	418	0	0	3	302	305	(50-75%)
0938 PFA	402	0	0	121	198	319	(75-99%)
0940 PFA	355	0	0	0	1	1	(0%)
0941 PFA	398	0	0	165	94	259	(50-75%)
0944 PFA	439	0	0	58	0	58	(1-25%)
5028 PFA	480	0	0	123	132	255	(50-75%)
5029 PFA	417	0	0	43	39	82	(1-25%)
5030 PFA	418	0	0	325	3	328	(75-99%)
5031 PFA	404	0	0	0	0	0	(0%)
5032 PFA	408	0	0	0	0	0	(0%)
5081 PFA	392	0	0	116	28	144	(25-50%)
5082 PFA	446	0	0	141	115	256	(50-75%)
5084 PFA	418	0	0	214	200	414	(75-99%)
5091 PFA	421	0	0	40	0	40	(1-25%)
Totals	5,816	0	0%	1,349	1,112	2,461	42%

Canopy closure levels in the upper canopy of the stands would remain the same after treatment. Dense stand conditions indicative of goshawk habitat would remain in the overstory. Noncommercial thinning and prescribed burning would reduce understory densities and would reduce hiding cover. There would be improvement in growth rates that would diminish in 5-15 years. The effects of the combined treatments would slightly reduce the risk of loss of the residual forest canopy due to high-intensity fire of the next 20-30 years. Total treatment of any post fledging area exceeding 75 percent would result in canopy closure reductions in excess of recommended levels for post fledging areas and would render them unsuitable. This occurs on three post fledging areas.

**Issue 1D: Elk security / cover / calving treatments** – There is a concern that commercial harvest, thinning and fuels reduction activities would have a detrimental impact on elk, including security, cover and calving habitat within the project area.

**Table 2.37 Summary of Habitat Effectiveness Index for Selected Management Areas and Cover**

<b>General Forest (Summer Range)</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal		1,672
		Satisfactory		885
		Total	13,163	2,557 (10,606 remaining in cover)
Open Road Density (miles / square mile)	3.0	2.42		2.33
Percent Cover	15	56		45
HEI Value	28	38		43
<b>General Forest Winter Range</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal		822
		Satisfactory		218
		Total	3,473	1,040 (2,433 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	1.39		1.29
Percent Cover	7	54		37
HEI Value	6	50		53
<b>Hammer Creek Wildlife and Recreation</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal		3
		Satisfactory		11
		Total	1,903	14 (1,889 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	.47		.47
Percent Cover	8	74		74
HEI Value	6	46		46

**Table 2.38 Summary of Acres of Alternative Treatments in Elk Calving and Security Habitat**

<b>Acres</b>		<b>Alternative 4</b>			
		<b>Harvest</b>	<b>Additional PCT</b>	<b>Prescribed Burning</b>	<b>Total Treated</b>
Elk Calving	3,599	0	1,039	191	1,230
Elk Security Habitat	3,410	0	880	396	1,276

This alternative would noncommercially thin 1,039 acres and burn natural fuels on 191 acres within mapped elk calving areas. Areas with a road density of less than 2 miles/square mile have been identified as potential elk security habitat. This alternative proposes noncommercial thinning in 880 acres and natural fuels burning in 396 acres in elk security habitat.

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced in GF and GFWR. The percentage of total cover comprised of satisfactory cover would be reduced; however, the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in both GF and GFWR. Forage to cover ratios would be optimal in GF and closer to optimal (60% forage to 40% cover) in GFWR compared to Alternative 1. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR.

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 14% of the elk security area. Elk calving habitat would be treated (39% of the area) to reduce density of coniferous cover which could improve the condition

of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas.

**Issue 2: Water Yield** - Vegetation management would affect water yield by increasing the rate of water delivery to streams. Since peak flows now occur earlier than they did historically, water flow from higher elevations is “flashier” and can coincide with peak flows from lower elevations. Timber harvest and noncommercial vegetation treatment decreases leaf area index and can lead to increased water yields and changes in the timing of flows.

Water yields associated with Alternative 4 are estimated to be the least increases of all the action alternatives. A further description of the EHA levels is included in Chapter 3.

**Table 2.39 Equivalent Harvest Area Percentages for Alternative 4**

Watershed	Alternative	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Newsome Creek Drainage</b>	4		15.8	14.7	14.4	14.1	13.7	13.4	12.9	12.4
<b>Gibson Creek Drainage</b>	4		5.3	5.8	6.3	6.8	7.3	7.7	7.4	7.1

### Mitigation, Design Criteria, and Resource Protection Measures

These design features are an integral part of each of the action alternatives. They are listed here separately to avoid repeating them in each alternative description. The design features pertinent to commercial harvest and logging activities do not apply to Alternative 4.

#### Soils

Mitigations, Design Criteria and Resource Protection Measures	Alternative
For tractor logging units, the leading end of logs would be suspended where practical during skidding to limit soil displacement. If slopes should exceed 35 percent on portions of the tractor units, winch lining would be required on a site-specific basis to minimize detrimental soil impacts.	<b>2 and 3</b>
Skid trails would be designated and approved prior to logging and would be located on already disturbed areas where possible. Where practical, skid trails would avoid ephemeral draws and scablands. Where not practical, skidding would be perpendicular to ephemeral draws. Skid trails, landings, and roads would be designed to limit the cumulative extent of activities. On previously undisturbed areas, limit heavy equipment (tractor logging and grapple piling) to 1-2 passes over the same ground.	<b>2 and 3</b>
In the following commercial harvest units, no net increase in soil compaction is allowed and activities are limited to existing compacted areas: 11, 20, 63.1, 78, 81, 112, 118, 125, 136, 166, 173, 198, 204, 226, 228, 240, 242, 253, 254, 316, 351, 375, 376, 384, 390, 401, 429, 445, 447, 448, 459, 476, 483, 485, 495, 499, 501, 504, 506, 533, and 576.	<b>2 and 3</b>
After harvest activities are completed, soil monitoring will evaluate the need for soil tilling. Tilling is expected to occur in Units 81, 136, 166, 204, 226, 240, 242, 316, 351, 376, and 506.	<b>2 and 3</b>
To reduce ground disturbance and compaction, skidding equipment may be allowed to operate off of designated trails when the ground is sufficiently frozen (depth of 6 inches), there is sufficient snow cover (20 inches), or the ground is frozen to 4 inches and there is at least 12 inches of snow.	<b>2 and 3</b>
Grapple pilers are limited to operating on existing compacted areas or 1-2 passes on previously undisturbed areas to result in no new additional detrimental compaction.	<b>All Action Alternatives</b>

**Wildlife**

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<p>For treatments near Goshawk nest sites. Seasonal restrictions on disturbance activities would be employed from March 1 to September 30, generally within ½ mile of nests. The restriction would apply to the following harvest units (and associated pre-commercial thinning and activity fuels burning): 62, 63.1, 72.1, 115, 139.1, 139.2, 162, 173, 292, 327, 347, 376, 416, 426, 473, 478, 484.1, 484.2, 499 and 533.</p> <p>The restriction would also apply to the following harvest units (and associated activity fuels burning): 125, 134, 228, 324 and 429. The restriction would also apply to the following harvest units (and associated noncommercial thinning): 133 and 157.</p> <p>The restriction would also apply to the following noncommercial thinning units (and associated activity fuels burning): 67, 83, 140, 256, 272, 283, 286, 322, 347, 372, 473, 484.1, 477, 482, 484.2, 510, 530, 552 and 560.</p> <p>The restriction would also apply to the following noncommercial thinning or prescribed burning units with focused aspen treatments: 431, 446, 482, 484.2, 499, 519 and 533;</p> <p>road construction on roads: 1600-024 temporary, 1610-075 NS1, NS2, temporary and 1700-105 temporary and;</p> <p>road decommissioning on roads: 1750, 1750-100, 1750-120, and 1750-027.</p> <p>Restrictions on hauling would only be applied within nest core areas and/or within 10 chains of nests. This restriction applies to hauling on the following roads: 1600-024, 1700-100 (south of 1700-150), 1700-160 (section 26), 1700-180 (west of 1750-500).</p> <p>Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, topographic features, movement of the fledged young out of the nest area or other site specific factors.</p>	<p>2</p>
<p>For treatments near Goshawk nest sites. Seasonal restrictions on disturbance activities would be employed from March 1 to September 30, generally within ½ mile of nests. The restriction would apply to the following harvest units (and associated pre-commercial thinning and activity fuels burning): 62, 63.1, 72.1, 115, 139.1, 162, 173, 292, 347, 376, 484.1, 478 and 499.</p> <p>The restriction would also apply to the following harvest units (and associated activity fuels burning): 125, 134, 228, 324 and 429.</p> <p>The restriction would also apply to the following harvest unit (and associated noncommercial thinning): 157.</p> <p>The restriction would also apply to the following noncommercial thinning units (and associated activity fuels burning): 67, 83, 140, 256, 272, 286, 322, 372, 482, 484.1, 477, 482, 510, 530, 552 and 560.</p> <p>The restriction would also apply to the following noncommercial thinning or prescribed burning units with focused aspen treatments: 431, 446, 499 and 519;</p> <p>road construction on roads: 1600-024 temporary, 1610-075 NS1, NS2, temporary and 1700-105 temporary and;</p> <p>road decommissioning on roads: 1750, 1750-100, 1750-120, 1750-027 and 1750-130.</p> <p>Restrictions on hauling would only be applied within nest core areas and/or within 10 chains of nests. This restriction applies to hauling on the following roads: 1600-024, 1700-100 (south of 1700-150), 1700-160 (section 26), 1700-180 (west of 1750-500).</p> <p>Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, topographic features, movement of the fledged young out of the nest area or other site specific factors.</p>	<p>3</p>

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<p>For treatments near Goshawk nest sites. Seasonal restrictions on disturbance activities would be employed from March 1 to September 30, generally within ½ mile of nests. The restriction would apply to the following noncommercial thinning units (and associated activity fuels burning): 67, 83, 140, 256, 272, 283, 286, 322, 347, 372, 473, 482, 484.1, 477, 484.2, 510, 530, 552 and 560.</p> <p>The restriction would also apply to the following noncommercial thinning or prescribed burning units with focused aspen treatments: 431, 446, 482, 484.2, 499, 519 and 533;</p> <p>road decommissioning on roads: 1750, 1750-100, 1750-120, and 1750-027.</p> <p>Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, topographic features, movement of the fledged young out of the nest area or other site specific factors.</p>	<p><b>4</b></p>
<p>For treatments near Goshawk nest sites. Seasonal restrictions on disturbance activities would be employed from March 1 to September 30, generally within ½ mile of nests. The restriction would apply to the following:</p> <p>Alternative 2: The following prescribed natural fuels burning units are entirely or partially within ½ mile of goshawk nests: 84.1, 84.2, 94, 111, 128, 176, 177, 188, 202, 239, 252, 288, 289, 293, 343, 344, 430, 446, 471, 479, 509, 514, 518, 519, 521, 525, 528, 543, 548, 549, 550 and 574.</p> <p>Alternative 3: The following prescribed natural fuels burning units are entirely or partially within ½ mile of goshawk nests: 84.1, 94, 111, 177, 188, 202, 252, 288, 343, 344, 430, 446, 471, 479, 509, 514, 521, 525, 528, 543, 549 and 550.</p> <p>Alternative 4: The following prescribed natural fuels burning units are entirely or partially within ½ mile of goshawk nests: 84.1, 84.2, 94, 111, 128, 176, 177, 188, 202, 239, 252, 288, 289, 293, 343, 344, 430, 446, 471, 479, 509, 514, 521, 525, 528, 543, 548, 549, 550 and 574.</p> <p>Within these units measures will be taken to minimize human disturbance in proximity to active nest sites. Where spring burning is prescribed, nest sites will be surveyed to determine occupancy prior to implementation of prescribed burning within these units. Where sites are occupied, burning of proximal units may be deferred until fall, or where possible, burns may be designed to limit smoke drifting through nest areas and to limit human presence within proximity to nests (within 10 chains and/or 30 acre nest cores). In some cases, pretreatment may be employed to reduce fuels in proximity to, and within nest sites outside of the nesting season. Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, topographic features, movement of the fledged young out of the nest area or other site specific factors.</p>	<p><b>All Action Alternatives</b></p>
<p>In accordance with standards and guidelines for hawk and owl nests contained in the LRMP, a no treatment buffer of five chains (330’) and a seasonal restriction (March 1 to August 1), within 10 chains (660’) of active hawk or owl nests, would be implemented under all action alternatives. This restriction applies to the same units and activities in each of the action alternatives as follows: timber harvest (and associated noncommercial thinning and fuels treatments in unit 401; noncommercial thinning and fuels treatments in units 6, 15, 17, 272, 516, 542, 554 and 580; natural fuels burning in units 521, 571, 586 and 589; road decommissioning on 1750-027 and haul on 1600 (10 chains each side of spur 145) and 1600-145. Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, movement of the fledged young out of the nest area or other site specific factors. Monitoring would be conducted to confirm that nest sites are buffered, and to determine nesting success during each year of operations.</p> <p>A survey would be conducted to confirm whether known nest sites are active. Monitoring would be conducted to confirm that active nest sites are buffered, and to determine nesting success during each year of operations.</p>	<p><b>All Action Alternatives</b></p>

Mitigations, Design Criteria and Resource Protection Measures	Alternative																													
<p>Seasonal restrictions would be implemented on units in proximity to the golden eagle nest. As directed by the LRMP, activities would be restricted within 40 chains from March 1 to August 15. This restriction applies to units and activities as follows: timber harvest (and associated noncommercial thinning and fuels treatments) in units 79 and 82 (Alt 2, 3 and 4 (noncommercial thinning and fuels treatments only)) 50, 75 and 80 (Alt 2 and 4 (noncommercial thinning and fuels treatments only)); noncommercial thinning and fuels treatments in unit 47; natural fuels burning in units 48 and 97 (Alt 2, 3 and 4). Restrictions may be waived or shortened on a case by case basis, depending on nesting status and chronology, movement of the fledged young out of the nest area or other site-specific factors.</p>	<p><b>All Action Alternatives</b></p>																													
<p>Snags would not be marked for removal, except for safety measures or road construction, and post treatment monitoring would be done, to ensure that snags are retained at a level consistent with the Viable Ecosystems Guide. These levels are as follows:</p> <table border="1" data-bbox="321 659 1122 821"> <thead> <tr> <th rowspan="2">Plant Association Group</th> <th colspan="2">Snags&lt;20 inches DBH</th> <th colspan="2">Snags&gt;20 inches DBH</th> </tr> <tr> <th>HRV low</th> <th>HRV high</th> <th>HRV low</th> <th>HRV high</th> </tr> </thead> <tbody> <tr> <td>Dry Grand Fir</td> <td>3.3</td> <td>7.3</td> <td>1.0</td> <td>3.4</td> </tr> <tr> <td>Douglas-fir</td> <td>1.5</td> <td>3.4</td> <td>.3</td> <td>1.9</td> </tr> <tr> <td>Moist Ponderosa Pine</td> <td>1.1</td> <td>2.4</td> <td>.2</td> <td>1.5</td> </tr> <tr> <td>Dry Ponderosa Pine</td> <td>0</td> <td>.2</td> <td>0</td> <td>.6</td> </tr> </tbody> </table> <p>Current conditions indicate that existing levels of snags are within HRV at the landscape level.</p>	Plant Association Group	Snags<20 inches DBH		Snags>20 inches DBH		HRV low	HRV high	HRV low	HRV high	Dry Grand Fir	3.3	7.3	1.0	3.4	Douglas-fir	1.5	3.4	.3	1.9	Moist Ponderosa Pine	1.1	2.4	.2	1.5	Dry Ponderosa Pine	0	.2	0	.6	<p><b>All Action Alternatives</b></p>
Plant Association Group		Snags<20 inches DBH		Snags>20 inches DBH																										
	HRV low	HRV high	HRV low	HRV high																										
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Douglas-fir	1.5	3.4	.3	1.9																										
Moist Ponderosa Pine	1.1	2.4	.2	1.5																										
Dry Ponderosa Pine	0	.2	0	.6																										
<p>Coarse woody debris levels would be retained at levels consistent with the Viable Ecosystems Guide or the Eastside Screens as follows:</p> <table border="1" data-bbox="321 1003 1122 1163"> <thead> <tr> <th>Plant Association Group</th> <th>HRV Low (linear feet)</th> <th>HRV High (linear feet)</th> <th>Trees per acre</th> </tr> </thead> <tbody> <tr> <td>Dry grand fir</td> <td>100</td> <td>257</td> <td>2-8</td> </tr> <tr> <td>Douglas-fir</td> <td>100</td> <td>233</td> <td>2-6</td> </tr> <tr> <td>Moist ponderosa pine</td> <td>55</td> <td>167</td> <td>1-5</td> </tr> <tr> <td>Dry ponderosa pine</td> <td>20</td> <td>55</td> <td>0-1</td> </tr> </tbody> </table>	Plant Association Group	HRV Low (linear feet)	HRV High (linear feet)	Trees per acre	Dry grand fir	100	257	2-8	Douglas-fir	100	233	2-6	Moist ponderosa pine	55	167	1-5	Dry ponderosa pine	20	55	0-1	<p><b>All Action Alternatives</b></p>									
Plant Association Group	HRV Low (linear feet)	HRV High (linear feet)	Trees per acre																											
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Douglas-fir	100	233	2-6																											
Moist ponderosa pine	55	167	1-5																											
Dry ponderosa pine	20	55	0-1																											
<p>For treatments proposed within the Bald Eagle Management Area (not an LRMP land use allocation), implement seasonal restrictions within ¼ mile non-line-of-sight or ½ mile line-of-sight (1.0 mile for blasting) of known bald eagle nest sites between January 1 and August 31 as described in the Programmatic Biological Assessment for Deschutes and Ochoco National Forests and Prineville BLM. This condition may be waived in a particular year if nesting or reproductive success surveys reveal that bald eagles are non-nesting or that no young are present that year or after eagles have fledged.</p> <p>Alternative 2 prescribed burning units – 589, 541 and 534.                      Alternative 3 prescribed burning units – 589.                      Alternative 4 prescribed burning units – 589, 541 and 534.</p>	<p><b>All Action Alternatives</b></p>																													
<p>For treatments proposed within bald eagle winter roosts, implement seasonal restrictions within 400 meters of roost sites from November 1 to April 30, as described in the Programmatic Biological Assessment for Deschutes and Ochoco National Forests and Prineville BLM.</p> <p>Alternative 2 – commercial harvest units 8 and 21, noncommercial treatment and associated fuel treatment units 2, 6, 15, 17, 22, 25, 27 and 20 and prescribed burning unit 9.                      Alternative 3 - commercial harvest units 8 and 21, noncommercial treatment and associated fuel treatment units 2, 6, 15, 17, 22, 25, and 20 and prescribed burning unit 9.                      Alternative 4 - noncommercial treatment and associated fuel treatment units 2, 6, 8, 15, 17, 22, 25, 27 and 20 and prescribed burning units 9 and 21.</p>	<p><b>All Action Alternatives</b></p>																													

Mitigations, Design Criteria and Resource Protection Measures	Alternative
For treatments proposed within mapped elk calving areas, implement seasonal restrictions May 15 to June 30. This applies to units in the appropriate alternatives: 101.1, 101.2, 123, 148, 150, 193, 203, 204, 205, 212, 253, 258, 261.1, 261.2, 287, 294, 299, 300, 316, 317, 318, 329, 332, 351, 364, 382, 399, 448, 476, 504, 509, 554, and 565.	<b>All Action Alternatives</b>
For treatments proposed within or adjacent to exclosures and spring developments, design treatments to promote or protect meadow and riparian hardwood habitat conditions (LRMP page 4-121); protect investments.	<b>All Action Alternatives</b>
For treatment units within General Forest Winter Range and in Hammer Creek allocations, implement seasonal restrictions on thinning, fuels and related activities between December 1 and May 1. For road construction, reconstruction road closure and decommissioning within General Forest Winter Range, implement seasonal restriction between December 1 and May 1 of each year.	<b>All Action Alternatives</b>
Restrict motorized use within the Old Growth Management Areas to designated or currently open routes year long. (1992 Ochoco National Forest Transportation Plan). Off-highway vehicle use is restricted to over the snow use only from December 1 to March 30. All terrain vehicles may not be used off of designated routes within the Old Growth Management Area.	<b>All Action Alternatives</b>

### Noxious Weeds

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<p>To reduce risk of noxious weed introduction and spread following implementation of prescribed burning, pastures would be evaluated to determine the need for rest or other adjustments to livestock grazing. Evaluation factors include:</p> <ul style="list-style-type: none"> <li>a) pre-fire ecological condition,</li> <li>b) fire intensity and duration,</li> <li>c) season of burning,</li> <li>d) post prescribed burn conditions and results,</li> <li>e) extent of weed infestations in the pasture, and</li> <li>f) acres burned relative to pasture size.</li> </ul> <p>The evaluation team would include the district range conservationist, weed coordinator, and hydrologist or Forest soils scientist. Project design that implements burning based on pastures as treatment units may facilitate this process.</p>	<b>All Action Alternatives</b>
Re-use of landings infested with noxious weeds would not occur, shade would be retained, and burning would be avoided within 100 feet of the infestation. In addition, to reduce potential spread during seed dispersal time, log haul from units associated with infestations would not occur August 1 to August 31. Use appropriate timber sale contract provisions. Treatment units associated with infestations include: 11, 21, 27, 39, 72, 74, 84, 95, 96, 106, 121, 133, 139, 140, 179, 184, 190, 226, 253, 316, 317, 318, 326, 331, 362, 377, 384, 401, 407, 408, 418, 431, 432, 438, 439, 442, 443, 447, 453, 456, 459, 464, 467, 470, 472, 475, 476, 485, 488, 495, 503, 506, 514, 518, 519, 521, 522, 530, 548, and 566. Exceptions could be made through coordination with the district weed coordinator.	<b>All Action Alternatives</b>
For noncommercial thinning and prescribed burning activities, no roads would be re-opened.	<b>All Action Alternatives</b>
Conduct pre and post-project survey to document existing infestations and to evaluate the effects of the project on noxious weeds.	<b>All Action Alternatives</b>
Inform and include the District weed coordinator with project planning and implementation.	<b>All Action Alternatives</b>
Conduct a weed identification workshop for personnel who would be preparing, implementing and administering any activities related to this project.	<b>All Action Alternatives</b>
Note noxious weed infestations during any phase of implementation (marking and cruising, sale administration, road de-commissioning, and fuels treatments).	<b>All Action Alternatives</b>

Mitigations, Design Criteria and Resource Protection Measures	Alternative
A noxious weed locator map would be provided to facilitate avoidance and monitoring.	<b>All Action Alternatives</b>
Retain desirable herbaceous growth on road shoulders, cuts, fills, ditches and drainages.	<b>All Action Alternatives</b>
Avoid or minimize disturbance within or adjacent to existing noxious weed infestations to prevent their expansion.	<b>All Action Alternatives</b>
Avoid weed-infested areas for camps, staging areas, landings or parking areas. This would most likely occur with infestations of Canada thistle along roadsides. The District weed coordinator would provide maps of weed infestations.	<b>All Action Alternatives</b>
Water for prescribed or wildfire control, watering roads, or other activities would be obtained from weed-free sites.	<b>All Action Alternatives</b>
If straw bales were needed for capturing sediment (road work), they would come from sources certified as weed-free.	<b>All Action Alternatives</b>
As a prevention measure to reduce the potential for transport or spread of noxious weeds by road construction or logging equipment, the timber sale contract would include C(T)6.343 (Opt.2) provision. This provision requires: (1) certification that equipment be clean of all plant or soil material that may result in the establishment or spread of noxious weeds; and (2) Notification of location where equipment was most recently used.	<b>All Action Alternatives</b>
To reduce the potential for weed spread through rock used on roads, Ochoco NF rock sources would be inspected to ensure materials are weed-free. Gibson pit (off of 1620-140) would not be used as a material source (infested with Canada thistle). Additionally, the sale contract would include provisions requiring any material from other sources is weed-free.	<b>All Action Alternatives</b>
Road and log landing rehabilitation areas would be reseeded as part of the final sale contract work. Locally collected native grass species including pinegrass ( <i>Calamagrostis rubescens</i> ) squirreltail ( <i>Elymus elymoides</i> ) Swezey, Sandberg bluegrass ( <i>Poa secunda</i> ), basin wildrye ( <i>Leymus cinereus</i> ) or native cultivars (commercial varieties of native grasses) including red fescue ( <i>Festuca rubra</i> ), blue wildrye ( <i>Elymus glaucus</i> ), and big bluegrass ( <i>Poa ampla</i> ). Supplemental forb species include vetch ( <i>vicia spp</i> ), yarrow ( <i>Achillea millefolium</i> ), flax ( <i>Linum spp.</i> ), and lupine ( <i>Lupinus spp.</i> ) would be seeded as a mixture at approximately 15 lbs per acre. All seed would be certified noxious weed-free by an approved testing laboratory, such as the Oregon State University Seed Lab.	<b>All Action Alternatives</b>

### Sensitive Plant Species

Mitigations, Design Criteria and Resource Protection Measures	Alternative
To protect sensitive species associated with riparian areas, no slash piling or ground-based equipment would be used within RHCAs, or within 100 feet of areas identified as containing Peck’s lily ( <i>Calochortus longebarbatus</i> var. <i>peckii</i> ) populations or habitat. Exceptions can occur on existing roads and crossings, or other areas (e.g. aspen) that have been approved by the District botanist. Potential habitat for Peck’s lily occurs in units 594, 410.1, 495, 309, 476 (and 1600-300 road), 504, and 44. Locations of areas for protection would be identified prior to treatment by District Botanist.	<b>All Action Alternatives</b>
Noncommercial thinning – There would be no noncommercial thinning between April 1 and August 1 within Peck’s lily populations or habitat. Known populations or habitat occur within units 44, 309, 410.1, 476 (and 1600-300 road), 495, and 504.	<b>All Action Alternatives</b>
Prescribed Fire – Direct ignition during spring burning would not occur within 100 feet of Peck’s lily populations or habitat. The district botanist will provide locations of populations and habitat.	<b>All Action Alternatives</b>

Mitigations, Design Criteria and Resource Protection Measures	Alternative
To reduce impacts to unique scabland habitat (lithosol soils), and associated <i>Archnatherum hendersonii</i> and <i>A. wallowaensis</i> habitat, construction of temporary roads or landings on scabland (lithosol soil) habitats would be avoided. If such landings or roads are necessary to meet project objectives, both roads and landings would be completely erosion proofed through the use of crushed rock and other appropriate methods (LRMP, Ch 4-121, 197, 227, Appendix D-4, 72, 83, and 93). Units proposed for treatment that may affect scablands include 10, 20, 29 (and 1680-152 road), 44, 240, 253, 254, 292, 317 (and 1700-100 road), 416, 426, 485 (and 1750-500 road), 580 (and 17 road), and 594. Locations of areas for protection would be identified prior to treatment by District Botanist.	<b>All Action Alternatives</b>
To reduce impacts to unique scabland habitat (lithosol soils), and associated <i>Archnatherum hendersonii</i> and <i>A. wallowaensis</i> habitat, slash would not be piled on scablands (LRMP, p. 4-131). Exceptions can occur on existing disturbed areas or other areas that have been approved by the district botanist. The district botanist will provide locations of populations and habitat. Units proposed for treatment that may affect scablands include 10, 20, 29 (and 1680-152 road), 44, 240, 253, 254, 292, 317 (and 1700-100 road), 416, 426, 485 (and 1750-500 road), 580 (and 17 road), and 594.	<b>All Action Alternatives</b>
Vehicles, including ATVs, would not be operated on scabland or within areas identified as Peck’s lily habitat. Potential habitat for Peck’s lily occurs in units 594, 410.1, 495, 309, 476 (and Road 1600 300), 504, and 44. Units proposed for treatment that may affect scablands include 10, 20, 29 (and 1680-152 road), 44, 240, 253, 254, 292, 317 (and 1700-100 road), 416, 426, 485 (and 1750-500 road), 580 (and 17 road), and 594. Locations of areas for protection would be identified prior to treatment by District Botanist.	<b>All Action Alternatives</b>

### Scenery Resources

Mitigations, Design Criteria and Resource Protection Measures	Alternative
To reduce long-term visual effects, tree marking paint would be used to designate trees to be harvested, as opposed to trees to be retained in partial retention corridors on Road 16 and 17. Or trees marked to be retained would have paint applied only on the side of the bole away from road.	<b>All Action Alternatives</b>

### Air Quality / Public Private Land Interface / Prescribed Fire

Mitigations, Design Criteria and Resource Protection Measures	Alternative
Use signing and public notice when burning during hunting season or other times when public use of the area is high.	<b>All Action Alternatives</b>
All prescribed burning operations would be coordinated with the Oregon State Department of Environmental Quality and the Oregon State Department of Forestry thru FASTRACS, the State of Oregon smoke management program. Anticipated weather conditions would be favorable for smoke dispersion.	<b>All Action Alternatives</b>
Burn areas adjacent to private land will be patrolled before leaving the site following ignition and daily thereafter until the unit fire management officer determines there is no further threat to private land.	<b>All Action Alternatives</b>
Hazard trees along private land boundaries, created by underburning activities, will be felled and left on site.	<b>All Action Alternatives</b>

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<p>Prescribed fire crews will be instructed to avoid deliberate ignition adjacent to the following features:</p> <ul style="list-style-type: none"> <li>• Live trees of all species greater than 15 inches d.b.h.</li> <li>• Snags greater than 12 inches d.b.h.</li> <li>• Large woody debris</li> <li>• Old slash piles with no fine fuels (small mammal habitat)</li> <li>• Scab flats</li> <li>• Springs, seeps, bogs</li> <li>• Ant mounds</li> </ul>	<p><b>All Action Alternatives</b></p>

### **Range Resources and Mining Resources**

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<p>Livestock fences, cattle guards, and other structural range improvements as designated by the District Range Conservationist would be protected and/or returned to their pre-treatment condition after any activities or operations are completed.</p>	<p><b>All Action Alternatives</b></p>
<p>Logging, burning, and road closure activities would be coordinated with permittees/claimants as needed. Efforts will be made to minimize conflicts between livestock use/mining activities and logging, thinning, and burning activities.</p>	<p><b>All Action Alternatives</b></p>
<p>Mineral material (gravel and rocks) used for road and landing construction or reconstruction would be obtained from a weed-free source.</p>	<p><b>All Action Alternatives</b></p>

### **Recreation Resources**

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<b>Special Use Permittees and Prescribed Burning</b>	
<p>Burning would be coordinated with holders of special use permits, as needed. Efforts would be made to minimize conflicts between recreation permittees and burning activities.</p>	<p><b>All Action Alternatives</b></p>
<b>Hammer Creek Wildlife / Recreation Management Area</b>	
<p>After harvest activities are complete, disturbed sections of system trails would be reconstructed to the existing (pre-harvest) condition or funds would be collected for reconstruction. This includes replacing any trail markers that are removed as a result of management activities.</p>	<p><b>All Action Alternatives</b></p>
<b>Camping in General including Antelope Reservoir Campground, Pine Creek Camp and Dispersed Sites</b>	
<p>Restrict commercial haul on holiday weekends (i.e., Memorial Day, July 4th, Labor Day) and during the opening weekend of Big Game hunting seasons.</p>	<p><b>All Action Alternatives</b></p>
<p>Treatments adjacent to management allocated dispersed recreation sites will be designed to compliment the recreational experience. This includes retaining visual screening where possible.</p>	<p><b>All Action Alternatives</b></p>
<p>Avoid utilizing management allocated dispersed recreation sites for log decks, piling slash, storing road rock, or dumping borrow material.</p>	<p><b>All Action Alternatives</b></p>
<p>Avoid allowing industrial (contractor) camps at management allocated dispersed campsites. If use is needed of the dispersed site to reduce additional impacts, coordinate with the Recreation Specialist.</p>	<p><b>All Action Alternatives</b></p>
<p>Fuels usable by campers in Antelope Reservoir Campground will be stacked or piled and dispersed site fire wood will be left lying except for Pine Creek Camp. Fire wood will need to be hand piled within the actual camping area (approximately 2 acres) at Pine Creek Camp.</p>	<p><b>All Action Alternatives</b></p>
<p>Remove hazard trees from dispersed sites within harvest treatment units.</p>	<p><b>All Action Alternatives</b></p>

**Watershed Resources (including RHCAs)**

<b>Mitigations, Design Criteria and Resource Protection Measures</b>	<b>Alternative</b>
The active headcut on Gibson Creek just downstream from the 1620130 road junction needs to be treated before harvest is accomplished in Units 166, 198, 226, 240, and 254.	<b>2 and 3</b>
Install cross drainage on the 1620 road, across from the headcut, on the drainage coming in from the west in Gibson Creek (section 27 downstream from 1620140 road).	<b>All Action Alternatives</b>
Ground-based machinery for logging operations would be avoided within RHCAs, including areas around springs. Exceptions would be evaluated on a case-by-case basis with the District Hydrologist or Fisheries Biologist. Exceptions include: <ol style="list-style-type: none"> <li>1. Pulling cable (winch lining) from an existing road in an RHCA in Unit 445.</li> <li>2. Using a mobile yarder system to remove commercial trees in RHCA in Units 8 and 21 and use would be restricted to existing roads.</li> <li>3. If necessary, use existing roads as landings in RHCAs to facilitate the obliteration of existing skid trails that are contributing to resource damage.</li> </ol>	<b>2 and 3</b>
Use existing crossings at Class IV streams to reduce additional temporary road building.	<b>2 and 3</b>
New industrial (contractor) camps in RHCAs would be avoided. Existing areas may be reused in order to facilitate obliteration.	<b>All Action Alternatives</b>
Precommercial thinning would not cause a reduction in shade on perennial streams (Class I, II, and III) with the exception of thinning to promote deciduous trees and shrubs. Thinning around hardwoods would be coordinated with the Fisheries Biologist or the Hydrologist.	<b>All Action Alternatives</b>
All landings used in harvest operations would be contoured, scarified, and seeded to increase infiltration and prevent surface erosion.	<b>2 and 3</b>
Temporary roads would be treated after use to provide long-term drainage needs, reduce potential for erosion, and eliminate travel to speed recovery (i.e. decommission). Treatments include constructing an earth berm entrance barrier, installing waterbars, scarification of the road bed, and grass seeding.	<b>2 and 3</b>
All temporary roads with grades greater than 5 percent would have a drainage dip installed approximately 10 to 30 feet from the stream on each side before the road is used for timber hauling.	<b>2 and 3</b>
Drive through fords are limited to situations where bottoms are hard enough to support traffic, approaches are low gradient, and fish are not present during flows.	<b>All Action Alternatives</b>
Newly installed culverts that would remain in place would be designed for peak flows and for fish passage at all life stages.	<b>All Action Alternatives</b>
Newly constructed and reconstructed roads with stream crossings would have adequate relief drainage installed prior to reaching the stream channel. In some areas, sediment traps or other structures would be placed to catch sediment. One newly constructed road crosses a stream (Road 1680152). Closed roads which will be reopened which may need stream crossing work are: Alternative 2 – 1700105, 16100050 Temp, 1600024, 1640170, and 1700035. Alternative 3 – 1700105, 1600024, and 1640170.	<b>2 and 3</b>
In channel work such as culvert replacement for Class I, Class II and Class III streams, would be accomplished in accordance with “Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources, June 2000”. For the West Maurys project area, the dates are July 1 to October 31.	<b>2 and 3</b>
Hauling on roads would be limited when necessary during extended wet periods and during spring break up to minimize erosion and sediment delivery.	<b>2 and 3</b>
Stream crossing structures (culverts and fords) needed on newly constructed and reconstructed roads on Class IV streams would be installed when the channel is dry.	<b>2 and 3</b>
Dust abatement on haul roads would occur to help meet water quality standards. Water used for dust abatement would be obtained from sources identified in the May 1996 Ochoco National Forest Water Conservation Plan.	<b>2 and 3</b>

<b>Mitigations, Design Criteria and Resource Protection Measures</b>	<b>Alternative</b>
Adequate drainage would be established and maintained on newly constructed, reconstructed, and temporary roads. Filter strips below drainage structures would be of sufficient size to catch sediment before runoff enters streams. If adequate filter strips were not available, slash, straw bales, rock aprons, or other filtering structures would be installed.	<b>2 and 3</b>
Hazard trees within RHCAs, which are required to be felled, would be left on site or managed for the attainment of Riparian Management Objectives for in-stream large wood.	<b>2 and 3</b>
Skid trails and temporary roads within 50 feet of the scab-conifer interface, that are used during harvest operations, would be located/designed to encourage the flow of water off of them and to reduce the concentration of flows.	<b>2 and 3</b>
Within RHCAs, effective ground cover would be established on landings and skid trails used for logging operations and on decommissioned and temporary roads. Methods to establish effective ground cover include scarification and grass seeding, or spreading slash.	<b>2 and 3</b>
Within RHCAs and when consistent with other management actions, slash would be placed on skid trails, temporary roads, and roads proposed to be closed. This would be done in conjunction with waterbarring when timber harvest or other activities are completed.	<b>All Action Alternatives</b>
During implementation, newly found springs and streams requiring classification or existing streams needing reclassification, would be coordinated through the Hydrologist or Fisheries Biologist prior to marking. The appropriate RHCA widths would be applied based on the RHCA category.	<b>All Action Alternatives</b>
The placement of new landings within RHCAs and ephemeral draws would be avoided. Existing landings may be reused in order to facilitate obliteration.	<b>2 and 3</b>
Hand fireline in RHCAs would not occur within 10 feet of intermittent (Class IV) streams, and within 20 feet of perennial (Class I, II and III) streams. Where it is necessary to limit fire spread near streams, surface fuels would be cleared without disturbing the soil.	<b>All Action Alternatives</b>
To reduce conifer encroachment in RHCAs, fire may be purposely ignited within RHCAs. Ignitions would create a mosaic of burned and unburned ground to maintain effective ground cover in riparian areas. Other ignitions, such as burning within meadow systems adjacent to creeks to retard conifer encroachment, will be coordinated with the District Botanist, Fisheries Biologist, Silviculturist, and/or Hydrologist. By reducing conifer encroachment in RHCAs, fire treatment would encourage the growth of deciduous hardwoods.	<b>All Action Alternatives</b>
Springs and landslide-prone area less than 1 acre will be protected by a slope distance of 50 feet (INFISH 1995). Unstable terrain and springs greater than 1 acre will be protected by a buffer of 150 feet (INFISH 1995). If there is any indication of recent landslide activity, the area will be evaluated by the geologist and the buffer may be increased. The following units are partially or entirely underlain by dormant landslide terrain. Skyline units common to both action alternatives are: 139.1, 157. Alternative 2 has skyline units: 133 and 139.2. Tractor Harvest HSL units common to both action alternatives are: 53, 148, 204, 376, and 445. Alternative 2 has unit 229. Tractor Harvest HTH units common to both action alternatives are: 78, 87, 401, 429, 448, 476, and 504.	<b>All Action Alternatives</b>

## Heritage Resources

Mitigations, Design Criteria and Resource Protection Measures	Alternative
Discovery of or disturbance to a cultural/heritage resource site during treatment operations would require efforts be made to avoid any further disturbance. Consultation with the Oregon State Historic Preservation Office (SHPO) would occur prior to resuming activities and site-specific modification or mitigation would be determined.	<b>All Action Alternatives</b>
Avoid and protect features, surface and subsurface integrity of heritage sites in the identified units through layout and design for commercial harvest, post harvest pre-commercial thinning, and activity fuels treatments.	<b>All Action Alternatives</b>
Unit layout would be designed to protect heritage sites and features to allow for successful harvest operations (i.e. modify unit boundary, post area for no treatment). Logging equipment, landing sites, temporary roads and skid trails would be restricted from site locations.	<b>All Action Alternatives</b>
Field survey involving 10 units represents a data gap. Compliance with SHPO would be completed prior to signing the Record of Decision. Treatment recommendations and the appropriate design criteria would be applied to these units. The unit numbers include 334, 343, 344, 350, 358, 411, 458, 494, 516, and 550.	<b>All Action Alternatives</b>
Noncommercial thinning would avoid adding fuels to site locations through unit layout and design; modification of the thinning prescription to remove less trees per acre or by reducing the diameter size to 3 or 4" d.b.h. with lop and scatter slash treatment; or removing generated thinning slash by hand away from heritage site locations. Specialists would coordinate with archaeologist to ensure site management concerns are addressed. Units identified for grapple piling would need to be burned when conditions would not creep into areas designated to protect. Noncommercial thinning is scheduled for timbered areas and shrub dominated areas commonly designed for juniper removal. Case specific thinning prescriptions would meet heritage concerns and environmental settings. Juniper thinning may be accomplished by chainsaw, girdling, or removing lower limbs along with lop and scatter slash treatment. In some cases, thinning slash may be left untreated when future risk for hot surface fire is not increased from current conditions. Site specific conditions would be considered for best treatment options.	<b>All Action Alternatives</b>
Fuels treatments would protect sensitive features like wooden features and structure remains by avoidance. Specialists would coordinate with archaeologist prior to burning for site locations and to ensure sites are avoided or in some cases burned with the appropriate low burning temperatures and short exposure times. Preparation for burning may include pulling slash away from sensitive features, use of black line, or use of fire line construction away from site boundary. Selected site types and environmental settings would be protected through low intensity, short duration fire prescriptions often met under spring-like burning conditions. No machine line or hand line would be allowed on heritage sites. Staging areas and use of ATVs would not be allowed on sites.	<b>All Action Alternatives</b>
For units with grapple piles and heritage sites to protect, burning conditions need to be such that fire would not creep into areas to be protected. Surface artifacts and environmental settings would be protected through burning prescriptions with low intensity, short duration fire prescriptions often met under spring-like burning conditions. Staging areas and use of ATVs would not be allowed on sites.	<b>All Action Alternatives</b>
Coordination would occur between specialists and include sale administrator, logging systems specialist, silviculturist, marking crew foreman, burn boss and archaeologist.	<b>All Action Alternatives</b>

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<ul style="list-style-type: none"> <li>• Coordinate with archaeologist during unit layout for the following commercial harvest units: 20, 44, 72.1, 81, 253, 300, 309, 351, 390, 401, 426, 429, 441, 445, 476, 483, 495, 504, 506, 533, 559, 563, 580, 576 and 594.</li> <li>• Restrict machinery on sites within scheduled grapple piling in units 20, 253, 300, 351, 390, 429, 441, 483, 495, 504, 506, 533 and 563. Avoid hand piling on site in unit 309.</li> <li>• Coordinate with archaeologist for post harvest noncommercial thinning for units 20, 44, 72.1, 253, 309, 390, 401, 426, 441, 445, 476, 483, 493, 495, 504, 506, 533, 563, 580 and 594.</li> <li>• Coordinate with archaeologist for activity fuels treatments in units: 20, 44, 72.1, 81, 253, 300, 309, 351, 390, 401, 426, 429, 441, 445, 476, 495, 504, 506, 533, 559, 563, 580, 576, and 594.</li> </ul>	2
<p><b>Specifics for Implementation Plan for Alternative 2:</b> Coordinate with archaeologist for noncommercial thinning units 6, 15, 27, 101.1, 180, 193, 212, 256, 259, 272, 421, 431, 441, 445, 483*, 542, 557, 580, and 582. *Proposed grapple pile units.</p>	2
<p><b>Specifics for Implementation Plan for Alternative 2:</b> Coordinate with archaeologist for fuels treatment units: 9, 24, 31, 128, 176, 188, 228, 392, 430, 518, 519, 521, 534, 541, 559, 568, 571, 586, 589 and 599.</p>	2
<ul style="list-style-type: none"> <li>• Coordinate with archaeologist during unit layout for the following commercial harvest units: 20, 44, 72.1, 81, 300, 309, 351, 390, 401, 429, 441, 445, 476, 495, 504, 506, 559, 576, 580, and 594.</li> <li>• Restrict machinery on sites within scheduled grapple piling in units: 20, 81, 287, 300, 351, 390, 429, 441, 495, 504, and 506. Avoid hand piling on site in unit 309.</li> <li>• Coordinate with archaeologist for post harvest noncommercial thinning for units 20, 44, 72.1, 287, 309, 390, 401, 441, 445, 476, 484.1, 495, 504, 506, 580 and 594.</li> <li>• Coordinate with archaeologist for activity fuels treatments in units: 20, 44, 72.1, 81, 287, 300, 309, 351, 390, 401, 429, 441, 445, 476, 484.1, 495, 504, 506, 559, 576, 580, and 594.</li> </ul>	3
<p><b>Specifics for Implementation Plan for Alt 3:</b> Coordinate with archaeologist for noncommercial thinning units 6, 15, 101.1, 180, 193, 256, 259, 272, 421, 483, 504*, 506*, 542, and 557. *Proposed grapple pile units.</p>	3
<p><b>Specifics for Implementation Plan for Alt 3:</b> Coordinate with archaeologist for fuels treatments units: 9, 24, 31, 188, 228, 392, 430, 518, 519, 521, 559, 568, 571, 576, 586, 589, and 599.</p>	3
<p><b>Specifics for Implementation Plan for Alt 4:</b> Coordinate with archaeologist for noncommercial thinning units 6, 15, 20*, 27, 44, 72.1, 81, 101.1, 180, 193, 212, 253*, 256, 259, 272, 309, 390*, 401, 421, 426, 441, 445, 476, 483*, 495*, 504*, 506*, 533*, 542, 557, 563*, 580, 582 and 594. *Proposed grapple pile units.</p>	4
<p><b>Specifics for Implementation Plan for Alt 4:</b> Coordinate with archaeologist for fuels treatments units: 9, 24, 31, 128, 176, 188, 228, 392, 430, 518, 519, 521, 534, 541, 559, 568, 571, 576, 586, 589, and 599.</p>	4

Mitigations, Design Criteria and Resource Protection Measures	Alternative
<b>Road Construction, Temporary Road Construction and Road Decommissioning</b>	
<p>Road construction activities would be planned to avoid and protect known site locations and features. Coordination during the planning stages would occur between the road planner and archaeologist to avoid conflicts and the road construction specifications would be designed accordingly. Any physical road closure barriers would be designed and placed to avoid and protect heritage sites and features through coordination with the archaeologist during planning and implementation stages. Roads to be decommissioned would be identified during the planning stages and any areas of conflict would be identified. Physical decommissioning activities would avoid and protect heritage sites (i.e. ripping would not be allowed on sites, drainage structures would be installed to prevent further erosion and meet heritage management objectives).</p>	<p><b>All Action Alternatives</b></p>

## Monitoring

Project monitoring focuses primarily on “implementation monitoring” to assure the selected alternative and mitigation measures are implemented as designed and achieve the desired results.

**Noxious Weeds** – As part of the Ochoco National Forest Integrated Weed Management Plan, activity areas would be surveyed for noxious weeds.

### Water Quality –

- Rates of flow, total suspended solids and turbidity would be monitored at a water quality station that was established at the Forest Service boundary on Newsome Creek in May 2004. Baseline data is currently being collected prior to activities associated with this environmental analysis.
- Temperature monitoring will be accomplished in identified stream reaches using temperature recorders. Between 1 and 2 selected reaches adjacent to precommercial thinning units will have pre- and post-treatment shade monitoring to verify that thinning and harvest guidelines are not reducing shade on perennial streams. In addition, pre- and post-shade monitoring will be accomplished on an aspen stand improvement project to determine the actual effect on shade.

### Wildlife –

- Monitoring of nest trees for reproductive activity prior to implementing activities would be done on a case-by-case basis, especially if activities are to be implemented during the seasonal restrictions and a waiver is needed.
- Monitoring of snag levels in selected harvest and prescribed burning units would be done to ensure minimum levels of snags are being maintained.

## Past, Present, and Reasonably Foreseeable Future Actions

Much of the project area has received past vegetation management treatments and roading actions except for the majority of the Hammer Creek Wildlife and Recreation Management Area. The implications of these actions will be discussed in Chapter 3 of this document under existing conditions for each resource. See [Map 17 Future Activities](#) for the majority of existing or planned activities within the project area.

**Sherwood Wildlife Burn** – In February 2004, a decision was signed to authorize prescribed burning to improve forage quality for big game and other species in the Hammer Creek Wildlife and Recreation Management Area. This is scheduled to occur in spring and fall 2004, with the objective of reducing the amounts of seedling and sapling sized conifers, increasing herbaceous vegetation production for forage, and reducing fuel loadings to reduce the risk of future, high-intensity fires. The prescribed burning would occur in a mosaic pattern within the 1,300-acre project area.

**Stream Restoration work** – An environmental analysis is currently in progress to repair headcuts and complete riparian planting. These activities have been identified in areas where stream bank erosion is causing head cutting, increasing in-stream sediment delivery, and lowering water tables. The project proposes to install step pool structures to reduce the flow rates, increase the amount of riparian vegetation, and stabilize stream banks to decrease overall sediment delivery in the long term. Additional work may

include riparian planting and fencing. This stream restoration work is expected to occur in various locations throughout the project area. Areas identified include Newsome Creek (1.0 mile of riparian planting and 15 headcut repair structures), Gibson Creek (1.25 miles of riparian planting and 12 headcut repair structures), Sanford Creek (0.5 miles of riparian planting), East Fork Shotgun Creek (0.25 miles of riparian planting and several headcut repair structures), and Cow Creek (4 headcut repair structures).

**Noxious weeds** - The Ochoco NF noxious weed environmental assessment authorized treatments of existing noxious weed populations along Forest Service roads 16 and 17. Noxious weed species include diffuse, spotted, and Russian knapweeds and Canada thistle. Treatments include the use of chemicals, limited hand pulling, and biological control. Approximately 65 acres are identified as weed sites but the sites are not fully occupied by plants.

**Continued Allotment Grazing** – There are five allotments within the project area. Grazing would continue in these areas at current levels. The Forest Service is currently developing a proposal to update all five Allotment Management Plans (AMPs) in the project area. The proposal is likely to contain provisions for improving riparian conditions based on recommendations in the Maury Mountain Watershed Analysis. The proposal is also likely to include provisions related to the range utilization standards contained in the Grazing Implementation Monitoring Module (IIT 2000).

**Routine and Annual Road Maintenance** – Road grading and blading would be done on Forest Roads 16, 1640, 17, 1700600 (to Antelope Reservoir). Replacement of Newsome Bridge on Forest Road 16 over the Crooked River would be completed in 2004. Repair of Pine Creek Bridge on Forest Road 17 over the Crooked River would be completed to improve the structural integrity of the bridge. There are also proposals to replace both the Pine Creek Bridge and Drake Creek Bridge (Forest Road 16 east) but neither has been funded at this time but could be funded within the next 5 years.

**Recreational activities** - The area is used for a variety of recreational activities such as hunting and dispersed camping and it is expected that use would continue at current or slightly increasing levels.

## Comparison of Alternatives

This section provides tables that summarize and compare the alternatives by how each responds to the purpose and need for stand density management, fuels treatments, and, key issues and associated measuring factors.

**Table 2.40 Comparison of the Activities by Alternative**

	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
<b>Total Project Area (Acres)</b>	37,974	37,974	37,974	37,974
<b>Total Treatment Area (Acres)</b>	0	18,508	14,404	17,047
<b>Commercial Treatments (Acres)</b>	0			
Individual Tree Selection (HSL)	0	6,213	3,956	0
Commercial Thinning (HTH)	0	1,521	1,502	0
Improvement Cut (HIM)	0	29	29	0
<b>TOTALS</b>	<b>0</b>	<b>7,763</b>	<b>5,487</b>	<b>0</b>
<b>Noncommercial Thinning (Acres)</b>				
Precommercial Thinning (PCT)	0	9,039	6,628	9,039
Juniper Thinning (JUT)	0	2,688	2,477	2,688
<b>TOTALS</b>	<b>0</b>	<b>11,727</b>	<b>9,104</b>	<b>11,727</b>
<b>Fuel Treatments (Acres)</b>				
Prescribed Fire (Activity Fuels)	0	7,662	6,071	7,662
Prescribed Fire (Natural Fuels)	0	4,198	3,234	3,941
Thinning with Fire	0	2,114	1,364	2,114
Grapple Pile (Activity Fuels)	0	3,833	2,621	2,638
Hand Pile (Activity Fuels)	0	79	80	79
<b>TOTALS</b>	<b>0</b>	<b>17,886</b>	<b>13,370</b>	<b>16,407</b>
<b>Logging Systems (Acres)</b>				
Tractor	0	5,449	4,319	0
Skyline	0	2,111	931	0
Light (Horse, Mobile Yarder, etc.)	0	203	238	0
<b>TOTALS</b>	<b>0</b>	<b>7,763</b>	<b>5,488</b>	<b>0</b>
<b>Road Management (Miles)</b>				
Road Construction	0	6.6	3.3	0
Temporary Road Construction	0	5.2	4.3	0
Road Reconstruction	0	37.4	34.1	0
Road Decommissioning	0	10.2	8.8	10.2
<b>Estimated Volume Associated with Commercial Harvest (million board feet)</b>	<b>0</b>	<b>25.9 MMBF</b>	<b>16.0 MMBF</b>	<b>0</b>
<b>Estimated Seasonal Jobs Associated with Timber Harvest</b>	<b>0</b>	<b>411</b>	<b>254</b>	<b>0</b>
<b>Estimated Seasonal Jobs Associated with Noncommercial Thinning and Slash Treatments</b>	<b>0</b>	<b>18</b>	<b>14</b>	<b>17</b>

**Table 2.41 Comparison of the Alternatives by Issue**

Issues	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
<b>Issue 1A - Late and Old Structure (Acres)</b>	There are <b>737</b> acres of LOS currently in patches of 5 acres or more. Generally, stands are multi-strata. There are a total of <b>880</b> acres of LOS regardless of patch size.	Approximately <b>157</b> acres of LOS in patches 5 acres or more would be commercially harvested. Generally, LOS would change from multi-strata to single-strata but remain LOS after treatment. No trees over 21 inches in diameter would be harvested. Noncommercial treatments would not affect LOS characteristics. There would be <b>86</b> acres of noncommercial thinning and <b>74</b> acres of prescribed burning.	<b>No</b> acres of LOS would be commercially harvested. Multi-strata LOS would remain multi-strata LOS. No trees over 21 inches in diameter would be harvested. Noncommercial treatments would not affect LOS characteristics. There would be <b>89</b> acres of noncommercial thinning and <b>49</b> acres of prescribed burning.	<b>No</b> acres of LOS would be commercially harvested. Multi-strata LOS would remain multi-strata LOS. Noncommercial treatments would not affect LOS characteristics. There would be <b>230</b> acres of noncommercial thinning and <b>28</b> acres of prescribed burning.
<b>Issue 1B - Connective Corridors (Acres)</b>	There are approximately <b>800</b> acres in connective corridors. To be effective, canopy closure should be in the upper one third of the site potential or above 50 percent.	Approximately <b>232</b> acres of connective corridors with canopy closures above 50 percent would be commercially harvested. This would reduce canopy closure to 40-50 percent, reducing effectiveness of connective habitat. Noncommercial treatments would not affect connective corridor canopy closure. There would be <b>111</b> acres of noncommercial thinning and <b>70</b> acres of prescribed burning.	There would be no commercial harvest in connectivity corridors. All stands with canopy closures above 50 percent in the overstory canopy would remain in these conditions after treatment. Connective habitat effectiveness in the larger diameter trees would not be altered over the current condition. Noncommercial treatments would not affect connective corridor canopy closure. There would be <b>20</b> acres of noncommercial thinning and <b>39</b> acres of prescribed burning.	There would be no commercial harvest in connectivity corridors. All stands with canopy closures above 50 percent in the overstory canopy would remain in these conditions after treatment. Connective habitat effectiveness in the larger diameter trees would not be altered over the current condition. Noncommercial treatments would not affect connective corridor canopy closure. There would be <b>322</b> acres of noncommercial thinning and <b>87</b> acres of prescribed burning.

Issues	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
<p><b>Issue 1C - Goshawk Habitat - Post Fledging Areas (Acres)</b></p>	<p>There are currently 14 goshawk post fledging (PFA) areas (5,817 acres) within the project area.</p>	<p>Approximately <b>1,066</b> acres of post fledging habitat would be commercially harvested. Commercial harvest would reduce canopy closure to 40-50 percent. Noncommercial treatments (<b>579</b> acres) and prescribed fire (<b>1,117</b> acres) would reduce hiding cover. Commercial harvest exceeding 50 percent of any one PFA and total treatment exceeding 75 percent of any one PFA, would likely result in unsuitable habitat conditions and displace pairs. This occurs on 2 post fledging areas.</p>	<p>Approximately <b>761</b> acres of post fledging habitat would be commercially harvested. Treatment prescriptions would be adjusted to promote intermingling of crowns in trees over 12 inches in diameter and promote patchy clumps of more dense, less dense and open areas. Noncommercial treatments (<b>394</b> acres) and prescribed fire (<b>573</b> acres) would reduce hiding cover. Commercial harvest would not exceed 50 percent on any one PFA and total treatment would not exceed 60 percent of any one PFA. No PFA results in unsuitable habitat conditions, all post fledging areas remain suitable.</p>	<p>No post fledging habitat would be commercially harvested and no trees over 9 inches in diameter would be cut. Existing dense stand conditions in the upper canopy levels would remain the same after treatment. Noncommercial treatments (<b>1,349</b> acres) and prescribed fire (<b>1,112</b> acres) would reduce hiding cover. Total treatment exceeding 75 percent of any one PFA, would likely result in unsuitable habitat conditions and displace pairs. This occurs on 3 post fledging areas.</p>
<p><b>Issue 1D - Elk Security Habitat, Cover, and Calving Habitat</b></p>	<p>See Table 2.42 for a summary of Elk habitat conditions.</p>			

Issues	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
<p><b>Issue 1E – Old Growth Management Area and Associated Pileated Feeding Habitat</b></p>	<p>There are 4 <b>Old Growth Management Areas</b> (OGMA) and associated pileated woodpecker feeding habitats within the project area. There are 1,370 acres of the Old Growth Management Areas. There are 1,234 acres of <b>pileated feeding habitat</b> areas. Desired percent for canopy closure is 60 percent.</p> <p><b>The upper Pine Creek drainage</b> contains an area with more than 600 acres of suitable pileated woodpecker habitat that is known to be currently occupied.</p>	<p><b>Old Growth Management Area –</b> No commercial harvest or noncommercial thinning would be done. Prescribed burning would occur on <b>521</b> acres within 2 of the OGMA. Some understory reductions in canopy cover percent would occur. Habitat conditions would be altered slightly over current condition.</p> <p><b>Pileated Feeding Habitat –</b> Approximately <b>449</b> acres would be commercially harvested. This would reduce canopy closure to 40-50 percent. Habitat suitability would be reduced on these acres. Noncommercial thinning and prescribed fire would occur on <b>443</b> and <b>37</b> acres respectively. This would reduce the density of trees in the understory, reduce susceptibility of trees to insect attack and therefore reduce the foraging substrate in the short-term.</p> <p><b>The upper Pine Creek drainage -</b> This alternative commercially harvests <b>391</b> acres of suitable habitat in the upper Pine Creek drainage. These acres would no longer provide suitable habitat for pileated woodpeckers. Noncommercial thinning and prescribed fire impacts would be similar to those already described.</p>	<p><b>Old Growth Management Area –</b> No commercial harvest or noncommercial thinning would be done. There would be <b>no</b> prescribed burning in any OGMA.</p> <p><b>Pileated Feeding Habitat –</b> Approximately <b>116</b> acres would be commercially harvested. There would be no commercial harvest in stands currently suitable for pileated woodpeckers – grand fir sites with more than 3 trees per acre greater than 21 inches in diameter. Treatments would be focused in stands to promote pileated woodpecker habitat where it currently does not exist. Treatments would retain additional co-dominant trees where possible. There would be no reduction in current suitable habitat. Noncommercial thinning and prescribed fire would occur on <b>359</b> and <b>15</b> acres respectively. This would reduce the density of trees in the understory, reduce susceptibility of trees to insect attack and therefore reduce the foraging substrate in the short-term.</p> <p><b>The upper Pine Creek drainage -</b> This alternative <b>would not</b> commercially harvest any acres in the Pine creek drainage retaining currently suitable habitat in that area. Noncommercial thinning and prescribed fire impacts would be similar to those already described.</p>	<p><b>Old Growth Management Area –</b> No commercial harvest or noncommercial thinning would be done. There would be <b>no</b> prescribed burning in any OGMA.</p> <p><b>Pileated Feeding Habitat –</b> Noncommercial thinning and prescribed fire would occur on <b>890</b> and <b>7</b> acres respectively. This would reduce the density of trees in the understory, reduce susceptibility of trees to insect attack and therefore reduce the foraging substrate in the short-term.</p> <p><b>Pine Creek drainage -</b> This alternative <b>would not</b> commercially harvest any acres in the upper Pine creek drainage. Noncommercial thinning and prescribed fire impacts would be similar to those already described.</p>

Issues	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
<b>Issue 2 – Water Yield</b>	<p>Ochoco Land and Resource Management Plan thresholds for these watersheds is the Equivalent Harvest Area of 35. All watersheds are currently below the Equivalent Harvest Area of 35. Newsome and Gibson Creek drainages are currently below the Equivalent Harvest Area of 20.</p>	<p>All watersheds remain below the Equivalent Harvest Area of 35. Newsome and Gibson Creek drainages remain below the Equivalent Harvest Area of 20 percent. The potential for increased water yield levels would be the greatest with this alternative. This is due to the most intensive vegetative treatments of all alternatives. Density management would reduce current vegetative cover conditions, thereby increasing the potential for higher water yields.</p>	<p>All watersheds remain below the Equivalent Harvest Area of 35. Newsome and Gibson Creek drainages remain below the Equivalent Harvest Area of 20 percent. The potential for increased water yield levels would be in between alternatives 2 and 4.</p>	<p>All watersheds remain below the Equivalent Harvest Area of 35. Newsome and Gibson Creek drainages remain below the Equivalent Harvest Area of 20 percent. The potential for increased water yield levels would be the least with this alternative. This is due to the maintenance of the most vegetative cover from less intensive vegetative treatments.</p>

**Table 2.42 Comparison of the Alternatives Relative to Issue 1D - Elk Security Habitat, Cover and Calving Areas**

Alternative 3 would not treat any stands that currently provide high quality cover in stands with canopy closures above 70 percent.

<b>General Forest (Summer Range)</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 2 Treatments</b>	<b>Alternative 3 Treatments</b>	<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal	<b>11,032</b>	2,557	2,270	1,672
		Satisfactory	<b>2,131</b>	885	482	885
		Total	13,163	3,442 (9,721 remaining in cover)	2,752 (10,411 remaining in cover)	2,557 (10,606 remaining in cover)
Open Road Density (miles / square mile)	3.0	2.42		2.33	2.33	2.33
Percent Cover	15	56		36	44	45
HEI Value	28	38		42	43	43
<b>General Forest Winter Range</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 2 Treatments</b>	<b>Alternative 3 Treatments</b>	<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal	<b>3,045</b>	1,040	983	822
		Satisfactory	<b>428</b>	218	102	218
		Total	3,473	1,258 (2,215 remaining in cover)	1,085 (2,388 remaining in cover)	1,040 (2,433 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	1.39		1.29	1.35	1.29
Percent Cover	7	54		34	37	37
HEI Value	6	50		51	52	53
<b>Hammer Creek Wildlife and Recreation</b>	<b>Goal</b>	<b>Existing Condition</b>		<b>Alternative 2 Treatments</b>	<b>Alternative 3 Treatments</b>	<b>Alternative 4 Treatments</b>
Cover (acres)		Marginal	<b>1,364</b>	14	7	3
		Satisfactory	<b>539</b>	11	5	11
		Total	1,903	25 (1,878 remaining in cover)	12 (1,891 remaining in cover)	14 (1,889 remaining in cover)
Open Road Density (miles / square mile)	Winter – 1.0 Summer – 3.0	.47		.47	.47	.47
Percent Cover	8	74		74	74	74
HEI Value	6	46		46	46	46
		<b>Existing Condition</b>		<b>Alternative 2 Treatments</b>	<b>Alternative 3 Treatments</b>	<b>Alternative 4 Treatments</b>
Calving Habitat in project area (acres)		3,599		1,399 (846, 363, 190)	1,055 (629, 236, 190)	1,230 (1,039, 191)
Elk Security Habitat (acres)		3,410		1,276 (435, 447, 394)	752 (73, 412, 267)	1,276 (880, 396)

### Conclusion Statements for Elk Habitat Key Issue 1D

#### Alternative 1

This alternative would maintain the current condition of all existing habitat for big game animals, including elk, in the short term. Stands that currently provide marginal cover would continue to close in and over time, more satisfactory (thermal) cover would develop as canopy closure increases. This would improve the cover quality index. The cover quantity index (% cover) would not be improved under this alternative. Over time, forage would become more limiting as stands become denser and the deviation of forage to cover ratio from what is thought to be optimal (60% forage to 40% cover) would increase. This would

correspond to a continual decrease in the cover quantity (% cover) index. The road density would not be reduced under this alternative and the road density indices would not be improved. There would be no initial increase in Habitat Effectiveness Index (HEI) in any management allocation, and HEI is expected to continually decrease until one or more disturbance events restore forage availability and abundance. An unplanned fire would substantially alter the distribution and amount of cover, likely burning in high intensity in areas of suitable cover if the event was in the area.

This alternative would not result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be retained until natural disturbance reduces it. Elk calving habitat would continue the trend of increasing density of coniferous cover which contributes hiding cover for cows and calves. However, it would also continue the trend of decreasing conditions of riparian hardwoods and other forage species which are additional habitat components of calving areas.

#### **Alternative 2**

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced in GF and GFWR. The percentage of total cover comprised of satisfactory cover would be reduced, however the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in GF, but would be reduced in GFWR. Forage to cover ratios would be closer to optimal (60% forage to 40% cover) in GF, but further from optimal in GFWR. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR, but scores 1 point below Alternative 3 due to removing too much cover (down to less than 40%).

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 23% of the elk security area. Elk calving habitat would be treated (39% of the area) to reduce density of coniferous cover which could improve the condition of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas.

#### **Alternative 3**

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced (in GF and GFWR). In GF and GFWR the percentage of total cover comprised of satisfactory cover would be reduced, however the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in GF and in GFWR. Forage to cover ratios would be optimal (60% forage to 40% cover) in GF and near optimal in GFWR. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR. In both of these allocations HEI would score 1 point higher in this alternative than in Alternative 2 because it removes the amount of cover needed to balance forage to cover ratios (down to about 40%).

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 9% of the elk security area. Elk calving habitat would be treated (29% of the area) to reduce density of coniferous cover which could improve the condition of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas.

#### **Alternative 4**

This alternative would alter the current condition of habitat for big game animals, including elk. Acreage of stands that currently provide marginal and satisfactory cover would be reduced in GF and GFWR. The percentage of total cover comprised of satisfactory cover would be reduced, however the cover quality index would not change. The cover quantity index (% cover) would be improved under this alternative in both GF and GFWR. Forage to cover ratios would be optimal in GF and closer to optimal (60% forage to 40% cover) in GFWR compared to Alternative 1. The road density would be reduced under this alternative and the road density indices would be improved in GF and GFWR. There would be an initial increase in HEI in GF and GFWR. In both of these allocations HEI would score 1 point higher in this alternative than in Alternative 2

because it removes the amount of cover needed to balance forage to cover ratios (down to about 40%), and scores an additional 1 point higher than Alternative 3 due in GFWR due to increases in road closures.

This alternative could result in disturbance to elk from human activity associated with project implementation. Cover within elk security habitat would be reduced on up to 14% of the elk security area. Elk calving habitat would be treated (39% of the area) to reduce density of coniferous cover which could improve the condition of riparian hardwoods and other forage species where they occur, but it would also reduce security cover for animals using the calving areas.

Table 2.43 Comparison of Alternatives by Management Area Treated

Management Area	Total Acres within Project Area	Alternative	Harvest and Associated Treatments	Additional Noncommercial Treatments	Additional Fuels Reduction Treatments
Developed Recreation	371	No Action	0	0	0
		Alternative 2	104	16	25
		Alternative 3	104	16	13
		Alternative 4	0	79	67
Eagle Roosting Areas	124	No Action	0	0	0
		Alternative 2	5	50	8
		Alternative 3	5	50	0
		Alternative 4	0	50	8
General Forest	23,560	No Action	0	0	0
		Alternative 2	5,556	3,534	2,497
		Alternative 3	3,931	3,184	2,077
		Alternative 4	0	7,844	2,947
General Forest Winter Range	6,463	No Action	0	0	0
		Alternative 2	1,412	1,275	1,498
		Alternative 3	784	1,137	1,051
		Alternative 4	0	3,316	1,051
Hammer Creek Wildlife / Recreation Area	2,548	No Action	0	0	0
		Alternative 2	15	137	75
		Alternative 3	0	55	75
		Alternative 4	0	152	74
Issue 1E Old Growth	1,370	No Action	0	0	0
		Alternative 2	0	0	521
		Alternative 3	0	0	0
		Alternative 4	0	0	0
Visual Management Corridor	3,221	No Action	0	0	0
		Alternative 2	671	649	376
		Alternative 3	651	578	335
		Alternative 4		1,145	494
Riparian Habitat Conservation Areas	3,961	No Action	0	0	0
		Alternative 2	11	1,294	572
		Alternative 3	11	933	432
		Alternative 4	0	1,300	501
<b>TOTAL</b>	<b>37,973</b>	No Action	0	0	0
		Alternative 2	<b>7,763</b>	<b>5,660</b>	<b>5,000</b>
		Alternative 3	<b>5,487</b>	<b>5,021</b>	<b>3,553</b>
		Alternative 4	<b>0</b>	<b>12,586</b>	<b>4,641</b>

Note: RHCAs overlay other land allocations and are not mutually exclusive; therefore acres are not included in totals.

### SUMMARY

Highlighted blocks in Table 2.43 indicate differences between the alternatives. These differences in acres treated are a result of meeting wildlife and / or watershed objectives to a higher degree in Alternative 3 compared with Alternative 2 and not commercially harvesting in Alternative 4. The table also displays that the majority of treatments occurs within the General Forest and General Forest Winter Range where management area allocation goals and objectives and standards and guidelines provide an emphasis to produce timber and forage while meeting Forest-wide standards and guidelines. In addition, treatments in other land allocations are to meet the individual area goals and objectives and standards and guidelines in addition to the Forest-wide standards and guidelines for Forest Health. Riparian Habitat Conservation Area treatments are designed solely to enhance conditions by increasing the abundance and density of hardwoods and shrubs. This would be done by removing conifer species that are shading the hardwoods and restricting growth. See Chapter 1 for further information.

Conifer thinning results in increases in growth and vigor in remaining trees. In treated stands in Alternative 2, stand conditions would be reduced to stocking levels to promote growth. In treated stands in Alternative 3, most stands would be reduced to stocking levels to promote growth except those stands in associated with specific wildlife needs such as goshawk, pileated woodpeckers, and elk. In these cases, while conifer thinning would be done, stocking levels would adjusted to promote more dense conditions that are favorable to these species. Not as much gains in increased growth and vigor would occur in these stands. In Alternative 4, no density management would occur in trees greater than 9 inches in diameter. Most stands would only realize small increments in increased growth and these increases would quickly be reduced as stands would continue to be under dense conditions.

Fire regime changes would reflect stand density management. Alternative 2 results in the most intensive stand treatments and would result in more stands changing to lower fire regimes than currently existing. Alternative 4 would result in the least reductions over current conditions with Alternative 3 in between Alternative 2 and 4.

Alternative 2 supports the highest levels of jobs in total due to the most acreage and volume produced of vegetative treatments proposed. Alternative 2 would result in approximately 25.9 million board feet in commercial timber products. Alternative 2 is estimated to support approximately 411 seasonal jobs associated with commercial timber harvest and 18 seasonal jobs associated with noncommercial thinning treatments. Alternative 3 proposes the next highest with Alternative 4 with the least amount of jobs. Alternative 3 is estimated to support 254 seasonal jobs and 14 seasonal jobs associated with noncommercial thinning treatments. Alternative 3 would result in approximately 16.0 million board feet in commercial timber products. Alternative 4 also does not support any jobs in the logging sector, only in the service contract sector because it does not commercially harvest any acres. Alternative 4 is estimated to support 17 seasonal jobs associated with noncommercial thinning treatments.

The following table displays the vegetative treatments relative to the purpose and need to reduce stand densities to promote the health and vigor of residual trees. This is achieved but move stands towards their recommended stocking levels. Density treatments would be more intensive in Alternative 2 than Alternative 3 because prescriptions in Alternative 3 would be adjusted to provide for more short-term wildlife habitat objectives for species that favor dense stand conditions. Alternative 4 results in the least amount of acres at recommended stocking levels due to the lack of treatment of trees larger than 9 inches in diameter.

**Table 2.44 Acres Treated to Reduce Stand Densities**

Condition and Risk	Total Acres in Project Area		Acres treated where risk is reduced and stocking managed (First set of numbers is total acres treated, bolded set of numbers is acres treated where risk is reduced and stocking managed)			
	Acres	Percent	Alt. 1	Alternative 2	Alternative 3	Alternative 4
Total Acres Treated <b>Total Effective Treatment</b>	28,722	76% of project area is above recommended stocking levels	0	11,677 acres treated <b>11,677 acres treated resulting in recommended stocking levels</b>	8,849 acres treated <b>7,396 acres treated resulting in recommended stocking levels</b>	9,471 acres treated <b>2,440 acres treated resulting in recommended stocking levels</b>
Total Percent of Stands at Risk Resulting in Recommended Stocking Levels			0%	49%	31%	10%

Table 2.45 displays the changes in fire regime conditions due to vegetative treatments. Reductions in fire regime intensity occurred with all action alternatives. The majority of reductions would be realized with Alternative 2 with the least amount of reductions occurring with Alternative 4.

**Table 2.45 Changes in Fire Regimes due to Vegetation Treatments**

Fire Regimes	Low Intensity		Mixed Intensity		High Intensity	
	Low	14,791	Low	3,934	Low	1,004
Historical Range of Variability	High	27,655	High	13,850	High	10,511
<b>Alternative 1 Existing Condition</b>	8,402 (below HRV)		14,105 (above HRV)		4,216 (within HRV)	
<b>Alternative 2 Proposed Action</b>	Treatments in Alternative 2 result in an increase of <b>3,734</b> acres of Low Intensity Fire Regime Conditions. After treatment there are <b>12,142</b> acres in Low Intensity Fire Regime (Still below HRV but closer)		Treatments in Alternative 2 result in an increase of <b>2,185</b> acres of Mixed Intensity Fire Regime Conditions. After treatment there are <b>11,920</b> acres in Mixed Intensity Fire Regime (Within HRV)		Treatments in Alternative 2 result in a decrease of <b>1,575</b> acres of High Intensity Fire Regime Conditions. After treatment there are <b>2,641</b> acres in High Intensity Fire Regime (Within HRV)	
<b>Alternative 3</b>	Treatments in Alternative 3 result in an increase of <b>3,059</b> acres of Low Intensity Fire Regime Conditions. After treatment there are <b>11,920</b> acres in Low Intensity Fire Regime (Still below HRV but not as close as Alt. 2)		Treatments in Alternative 3 result in an increase of <b>1,726</b> acres of Mixed Intensity Fire Regime Conditions. After treatment there are <b>12,379</b> acres in Mixed Intensity Fire Regime (Within HRV)		Treatments in Alternative 3 result in a decrease of <b>1,322</b> acres of High Intensity Fire Regime Conditions. After treatment there are <b>2,894</b> acres in High Intensity Fire Regime (Within HRV)	
<b>Alternative 4</b>	Treatments in Alternative 4 result in an increase of <b>2,247</b> acres of Low Intensity Fire Regime Conditions. After treatment there are <b>10,655</b> acres in Low Intensity Fire Regime (Still below HRV but not as close as Alts 2 or 3)		Treatments in Alternative 4 result in an increase of <b>1,192</b> acres of Mixed Intensity Fire Regime Conditions. After treatment there are <b>12,913</b> acres in Mixed Intensity Fire Regime (Within HRV but closer to high levels than Alt. 2 or 3)		Treatments in Alternative 4 result in a decrease of <b>1,084</b> acres of High Intensity Fire Regime Conditions. After treatment there are <b>3,132</b> acres in High Intensity Fire Regime (Within HRV but higher levels than Alt. 2 or 3)	

