

Flounce Around Timber Sale EA

Appendices

Appendix A

Cultural Resources

Affected Environment

The State Historic Preservation Organization standards stipulate that 100 percent of high probability lands, 20 percent of medium probability lands, and 5 percent of low probability lands within the project lands must be surveyed. Also, a minimum of 20 percent of the total project area is required to be surveyed. These standards were met or exceeded for this project through three different surveys.

In accordance with the National Historic Preservation Act of 1966, Section 106, an archaeological reconnaissance was conducted for the Lost Creek project area. Seven sites were found and recorded in the project area. Seven previously-recorded sites exist in the project area.

The following write-up is taken from the Lost Creek Watershed Analysis (1998), the Flounce Around Project Cultural Report (2003), and the BF97-35 Report (1997).

Prior to Euro-American settlement in the 19th century, the upper Rogue River drainage was likely a boundary area between the Takelma people of the Rogue River Valley and the Molala who inhabited parts of the Cascade Mountains from Mt. Hood to the upper Rogue River.

Archeological surveys in the Lost Creek area suggest a long history of human use. About 10,000 years ago (Paleo-Indian period), people began migrating into the Rogue Valley. It is presumed these people lived in small mobile groups and hunted big game. People used the Lost Creek area sporadically until about 5,000 years ago (Archaic period), after which, use of the area increased. During this time, collector-village subsistence and settlement patterns were noted in the region, including the first appearance of pithouses and the use of the mortar and pestle. By about 1,500 to 1,000 years ago (Archaic period), small permanent villages existed in the Lost Creek area. During this time period, the bow and arrow and associated small projectile points were introduced. From 1,000 years ago to contact (Formative and Protohistoric period), the Takelma had a settlement pattern closely related to their subsistence regime. The permanent winter villages were located in the low elevation river valleys of the region in close proximity to predictable and significant food resources. During the warmer months of the year, the Takelma would temporarily move to their seasonal base camps in the surrounding uplands to hunt, gather crops, and procure other resources not available near their winter villages.

The staple vegetal foods of the Takelma were acorns and camas. A variety of root crops, manzanita berries, pine nuts, tarweed seeds, wild plums, and sunflowers augmented their diet. Anadromous fish (especially salmon), deer, elk, a variety of small mammals, and certain insects provided protein in the Takelma diet.

The ethnographic record for the interior southwestern Oregon is limited due to the rapid destruction of the Native American cultures in the region as a result of the Rogue Indian Wars of the 1850s. With the discovery of gold in northeastern Oregon, prospectors from the Rogue Valley created a route over the Cascades to the gold fields of the John Day River. Roads to the Klamath Basin branched off the road to John Day and included the Jacksonville to Fort Klamath Military Road. Beginning with the Homestead Act in 1862 and ending in 1915, many acres of land were transferred out of federal ownership into the private sector.

Effects of All Alternatives on Cultural Resources

There would be no direct environmental consequences to cultural resource, with the exception of one designated crossing of the historic Military Road in T33S, R2E, Sections 8 and 9. All sites would be buffered and protected. Increased activity in the project area could lead to further looting of some sites.

Appendix B

Botany

Summary

- The Flounce Around project area is outside the ranges and does not contain suitable habitat for *Fritillaria gentneri*, *Limnanthes floccosa* ssp. *grandiflora*, or *Lomatium cookii*. Activities proposed under the two action alternatives would be “no effect” to these three Endangered plants.
- Activities proposed under the action alternatives would not trend toward listing Special Status vascular or nonvascular plants.
- Because of their rarity, Sensitive fungi are unlikely to occur in the harvest units. The risk is low that they would be impacted during harvest activities.

Introduction

Special Status plants include vascular plants, lichens, bryophytes, and fungi in the following four categories: 1) Federal Threatened and Endangered (T&E), 2) State Threatened and Endangered, 3) Sensitive, and 4) Assessment. The BLM policy is to: 1) manage, protect, and conserve T&E species and the ecosystems on which they depend and 2) ensure that actions authorized on BLM-administered lands do not contribute to the need to list Bureau Special Status species under the provisions of the Endangered Species Act (ESA). Bureau Tracking species are species that are apparently secure or species for which more information is needed to determine their rarity. Protection of Tracking species is discretionary and project evaluations are not required for them (USDI 2001 and USDI 2003). However, Tracking plant sites found in the Flounce Around project area are included in this report for information purposes.

Survey and Manage (S&M) was formerly a designation for rare and uncommon vascular and nonvascular plants and fungi. The Record of Decision for the Final Supplemental Environmental Impact Statement (FEIS) to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, signed March 22, 2004 and effective April 21, 2004, removed Survey and Manage as a management category for plants and animals. Former S&M species that were determined to still need management or protection were reassigned to the Special Status species program. They are considered for analysis in this EA under their new status. Former S&M species that do not have Special Status are not analyzed or managed. Plants and fungi are analyzed in this EA based on their status on the April 2005 Medford District BLM Special Status Plant list.

Methodology

Over the last 10-15 years, approximately 6,806 acres of BLM-managed lands in the Lost Creek Watershed have been surveyed for Special Status vascular plants prior to timber sales, fuels reduction, silvicultural treatments, or restoration projects: 4,345 acres were surveyed for Special Status lichens and bryophytes and 1,456 acres were surveyed for S&M fungi. Surveys for Special Status vascular and nonvascular plants have been completed in all proposed Flounce Around harvest units. Surveys are conducted by professional botanists at the time of year when species can be found using an intuitively controlled methodology. Survey reports with Special Status plant site reports, noxious weed maps, and species lists are on file in the Butte Falls Resource Area.

The assumption was made in the FEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines that predisturbance field surveys for Special Status fungi would not be conducted. “If project surveys for a species were not practical under the Survey and Manage standards and guidelines... then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either. Instead, the other components of pre-project clearances, such as habitat examinations; habitat evaluation; evaluation of species-habitat associations and presence of suitable or potential habitat; review of existing survey records, inventories, and spatial data; or utilization of professional research, literature, and other technology transfer sources are most likely to be used (USDA and USDI 2004a, 122).” All Sensitive fungi in the Medford District (see Table B-3) were formerly S&M species for which surveys were not considered practical.

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Between 1998 and 2001, under the old S&M program, fungi surveys were conducted on the east side of Lost Creek Lake on approximately 4,350 acres for the Lower Big Butte, Flying Lost, B Lost, and Round Forks projects. Some of the surveyed units are in the Lost Creek Watershed and some are in adjacent watersheds. No Sensitive fungi (see Table B-3) were discovered during those surveys.

Information about the ranges, habitat associations, and number of fungi sites are from the Geographic Biotic Observation database (GeoBob), *Management Recommendations for Survey and Manage Fungi* (USDA and USDI Castellano and O'Dell 1997), *Handbook to Strategy I Fungal Species in the Northwest Forest Plan* (USDA and USDI Castellano, et al. 1999), *Handbook to Additional Fungal Species of Special Concern in the Northwest Forest Plan* (USDA and USDI Castellano, et al. 2003), and Oregon Natural Heritage Program (http://oregonstate.edu/ornhic/survey_manage_ranks.html).

Assumptions

- Fungi surveys have not been conducted in the Flounce Around harvest units and it is unknown if Sensitive fungi occur there. The 2004 FEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines addresses incomplete or unavailable information. “While additional information would add precision to estimates, the basic data and central relationships are sufficiently well established that any new information would be unlikely to reverse or nullify understood relationships. Though new information would be welcome, no missing information is essential to a reasoned choice among the alternatives. . . . Any discussion of risk based on rarity and likelihood of disturbance must recognize that, for many species, only a small percentage of potential habitats have been surveyed. In situations where limited species-specific information is available, more reliance, by necessity, must be placed on information regarding the condition and management of the overall landscape in formulating conclusions regarding environmental consequences (USDA and USDI 2004b, 108-109).”
- Forests on private lands are in an early seral condition and do not provide habitat for Special Status species associated with late-successional forests. Special Status plants receive no protection on private lands, but are protected on BLM-managed lands according to ESA and BLM policies and regulations.
- The landscape and plant communities in the Lost Creek watershed have changed over time as a result of human activities and natural processes. Data are not available for the abundance or extent of rare plants in the Lost Creek Watershed prior to botanical surveys that have been conducted on BLM-managed lands over the last 10-15 years. It is unknown if rare plants or fungi have been impacted as a result of human activities or natural ecosystem processes during the last 150 years. Only observations about current environmental conditions in relation to the known habitat requirements of Special Status species can be made. The assumption is made that changes that have occurred during the last 150 years may have caused some native plants to become rarer.

Affected Environment

Threatened and Endangered (T&E) Plants

Three Endangered plants have their ranges within the Butte Falls Resource Area - *Fritillaria gentneri*, *Limnanthes floccosa* ssp. *grandiflora*, and *Lomatium cookii*. The Flounce Around project is located outside the ranges of all three species. However, Special Status plant surveys conducted in the Flounce Around project area would have documented endangered plants if they were present in the treatment units. No T&E plant populations have been discovered in the Lost Creek Watershed.

Special Status Vascular and Nonvascular Plants

Eleven Special Status vascular plants and six nonvascular plants (lichens and bryophytes) have been documented in the Lost Creek Watershed (see Table B-1). Only one vascular plant and one lichen are located in proposed timber harvest units (see Table B-2).

Table B-1. Special Status Vascular and Nonvascular Plants Documented in the Lost Creek Watershed			
Scientific Name	Common Name	Lifeform	Status
<i>Carex serratodens</i>	saw-toothed sedge	vascular	Assessment
<i>Cirsium ciliolatum</i>	Ashland thistle	vascular	Sensitive
<i>Crumia latifolia</i>		bryophyte	Assessment
<i>Cypripedium montanum</i>	mountain lady-slipper	vascular	Tracking
<i>Cupressus bakeri</i>	Baker cypress	vascular	Assessment
<i>Fabronia pusilla</i>		bryophyte	Tracking
<i>Funaria muhlenbergii</i>		bryophyte	Assessment
<i>Hedwigia detonsa</i>		bryophyte	Tracking
<i>Leptogium cyanescens</i>		lichen	Tracking
<i>Lewisia cotyledon</i> var <i>howellii</i>	Howell's lewisia	vascular	Tracking
<i>Limnanthes floccosa</i> ssp <i>bellingiana</i>	Bellinger's wooly meadowfoam	vascular	Sensitive
<i>Lithophragma heterophyllum</i>	many-leaf prairie star	vascular	Tracking
<i>Navarretia heterandra</i>	Tehama navarretia	vascular	Assessment
<i>Plagiobothrys glyptocarpus</i>	sculptured allocarya	vascular	Assessment
<i>Ribes inerme</i> var <i>klamathense</i>	Klamath gooseberry	vascular	Tracking
<i>Scribneria bolanderi</i>	Scribner's grass	vascular	Tracking
<i>Tripterocladium leuocladulum</i>		bryophyte	Assessment

Table B-2. Special Status Plants Documented in Flounce Around Proposed Silviculture Treatment Units					
Scientific Name	Status	Location	Number of Sites	Treatment	Protection
<i>Cypripedium montanum</i>	Tracking	T33S, R1E, Sec. 23	1	Density Management (Alts. 2 and 3)	area with site dropped from unit
<i>Leptogium cyanescens</i>	Tracking	T33S, R2E, Sec. 5	1	Density Management (Alt. 2) Dropped (Alt. 3)	100-foot buffer

Cypripedium montanum (mountain lady-slipper) is native to western North American where it is widely distributed, but most populations contain less than 10 plants. In the Medford District, 149 sites have been documented. Mountain lady-slipper is an autotrophic orchid that occurs in a broad range of habitats and soil substrates (including ultramafic) between 1,500 and 6,500 feet in elevation, but usually from 2,500-4,000 feet. Habitat is mostly northerly aspects in mixed conifer or evergreen/oak woodlands, often with 60-80 percent canopy closure. The site in the Flounce Around project area was at the edge of a proposed density management unit, but the area containing the site was dropped from the unit with a 170-foot buffer.

Leptogium cyanescens is a gelatinous lichen whose range covers western Washington and Oregon. It occurs on the bark of hardwood trees, on rotten logs, or on rocks in mixed conifer and Douglas-fir stands and in maple and willow thickets in both riparian and upland habitats. The site in Flounce Around is on a rock next to an old skid road. The unit is proposed for density management under Alternative 2 and was dropped under Alternative 3 because the area is in a Northern Spotted Owl Critical Habitat Unit. Six sites have been documented in the Medford District BLM, all northeast of Trail.

Special Status Fungi

The Bureau Tracking fungi *Plectania milleri* was reported in proposed Flounce Around treatment units during past fungi surveys in the Lost Creek Watershed. Specimens at 3 locations in T33S, R1E, Section 35 were tentatively

identified as *Plectania milleri*, but were never verified by a taxa expert. Management of sites and NEPA analysis are not required for Bureau Tracking species.

Ten fungi that were formerly S&M species for which surveys were not considered practical now have Sensitive status on the Medford District BLM (see Table B-3). Four have been documented in the District and the other six are suspected to be here based on what is known about their habitats and ranges. None of the 10 Special Status fungi have been found to date in the Butte Falls Resource Area, although various levels of fungi surveys have been conducted on approximately 7,700 acres over the last 7 years.

Information about the habitat requirements for these 10 fungi is limited, but all are known to be ectomycorrhizal and associated with late-successional forests. They are best detected during the fall fungi season and depend on wind or animals for spore dispersal. Few sites have been documented for these fungi in the Pacific Northwest. Because of their rarity, the likelihood that they occur in Flounce Around harvest units is low.

Scientific Name	Status	D/P/S ¹	Closest Known Site to Flounce Around	Number of Sites Medford	Number of Sites NWFP ²	Habitat ³
<i>Boletus pulcherrimus</i>	Sensitive	D	31 miles	4	36	Yes
<i>Dermocybe humboldtensis</i>	Sensitive	S	Roseburg BLM	0	4	Yes
<i>Gastroboletus vividus</i>	Sensitive	S	Star Ranger District-Applegate	0	4	Yes
<i>Phaeocollybia californica</i>	Sensitive	D	Grants Pass Resource Area	0	34	Yes
<i>Phaeocollybia olivacea</i>	Sensitive	D	18 miles	4	99	Yes
<i>Phaeocollybia oregonensis</i>	Sensitive	S	Eugene and Coos Bay BLM	0	11	Unlikely
<i>Plectania milleri</i>	Tracking	D	3 unverified sites: 2 in proposed density management unit	82	178	Yes
<i>Ramaria spinulosa</i> var. <i>diminutiva</i>	Sensitive	S	Roseburg BLM	0	1	Yes
<i>Rhizopogon chamalelotinus</i>	Sensitive	S	Josephine County	0	1	Yes
<i>Rhizopogon ellipsosporus</i>	Sensitive	D	35 miles	1	3	Yes
<i>Rhizopogon exiguous</i>	Sensitive	S	Josephine County	0	3	Yes

¹D/S – documented or suspected on Medford District BLM-managed lands
²Number of sites in the Northwest Forest Plan area (GeoBob 2005)
³Habitat – suitable habitat in the Flounce Around timber harvest units

Information about the ranges, habitat associations, and number of sites are from the Geographic Biotic Observation database (GeoBob), *Management Recommendations for Survey and Manage Fungi* (USDA and USDI Castellano and O’Dell 1997), *Handbook to Strategy I Fungal Species in the Northwest Forest Plan* (USDA and USDI Castellano, et al. 1999), *Handbook to Additional Fungal Species of Special Concern in the Northwest Forest Plan* (USDA and USDI Castellano, et al. 2003), and Oregon Natural Heritage Program (http://oregonstate.edu/ornhic/survey_manage_ranks.html).

Boletus pulcherrimus is a red-pored mushroom that grows solitary in humus in association with the roots of mixed conifers (grand fir and Douglas fir) and hardwoods. It is native to the Pacific Northwest and fruits from July through December, although it does not fruit every year.

Dermocybe humboldtensis is a gilled mushroom that fruits in November and December in association with conifer roots. It has been documented only in Humboldt County on stable dunes and in Roseburg in a late-successional Douglas-fir forest in a riparian reserve at 1,720 feet elevation. No sites have been documented in the Medford District BLM, but it is suspected here because it is mid-way between the known sites and contains similar habitat to the Roseburg site.

Gastroboletus vividus is a semi-underground boletoid mushroom. It forms below ground in association with the roots of various conifers and is known only within the range of the Northern Spotted Owl. It was documented in southern Oregon in Star Ranger District/Rogue-Siskiyou National Forest in a low elevation Douglas-fir forest, although other sites across its range are at higher elevations and are associated with Shasta red fir and mountain hemlock.

Phaeocollybia californica is a gilled mushroom that may fruit in March, May, October, or November. It is associated with the roots of silver fir, Sitka spruce, Douglas fir, western hemlock, oak, or tanoak in later successional mixed evergreen forests. Native to the Pacific Northwest, it has been found in the Arcata, Coos Bay, Eugene, and Roseburg BLM Districts. It was recently discovered in the Grants Pass Resource Area in Josephine County.

Phaeocollybia olivacea is a fall-fruited gilled mushroom found scattered or in arcs in later successional mixed evergreen forests in association with oak or tanoak roots.

Phaeocollybia oregonensis is a fall-fruited gilled mushroom associated with the roots of silver fir, Douglas fir, or western hemlock in moist late-successional forests.

Plectania milleri has been documented at 82 sites in the Medford District and 178 sites in the NWFP area. Its known range includes southwestern Oregon, Mount Hood National Forest, and Idaho. It typically grows on duff in late-successional or old-growth forests.

Ramaria spinulosa var. *diminutiva* is a coral fungi that fruits in the fall on humus or soil in association with conifers. It is known from Europe and the Pacific Northwest. The closest known site to the Flounce Around area is in Roseburg in a late-successional Douglas-fir stand at 1,200 feet elevation.

Rhizopogon chamalelotinus is a truffle that grows in the duff in association with roots of Douglas fir and sugar pine at around 3,600 feet elevation. It fruits in June and September and has been documented in Josephine County and in Idaho.

Rhizopogon ellipsosporus is a truffle that grows in the duff in association with the roots of Douglas fir and sugar pine at around 2,800 feet elevation. It fruits in October and is native to the Pacific Northwest. Sites have been documented on the Medford BLM in a Douglas-fir forest in the Applegate and in Josephine County on the Rogue-Siskiyou National Forest.

Rhizopogon exiguous is a truffle that grows in the duff in association with Douglas-fir and western hemlock at around 3,100 feet elevation. It fruits in March, August, September, and November and is known within the range of the Northern Spotted Owl. One site was documented in Josephine County in a low elevation Douglas-fir forest.

Existing Conditions

The proposed Flounce Around harvest units are north, west, and southwest of Lost Creek Lake in the Lost Creek Watershed, on the western slopes of the Cascade Range. Elevation of the units ranges from approximately 1,900 to 4,000 feet. Vegetation is a mosaic of plant communities, including conifer stands, mixed hardwood-conifer woodlands, oak woodlands, chaparral patches, grasslands, and rocky scablands. Special habitats include rock outcrops and cliffs, riparian corridors, meadows, and seeps. Oregon white oak, ponderosa pine, Douglas-fir, and white fir plant series are represented in the project area.

The native people who lived in this region up to the mid-1800s regularly used fire to manipulate the landscape to obtain food resources. Under a frequent fire return interval, the oak savannas and woodlands in the valleys and foothills were kept open and free from small trees and a dense understory. Lightning-started wildfires also burned conifer stands under a natural fire regime, resulting in a mosaic of early, mid-, and late seral woodlands and conifer stands.

Land practices changed with the arrival of Euro-American settlers in the last half of the 19th century. Riparian areas, valleys, and foothills were especially altered where farming, grazing, road building, and homesteading were concentrated. Meadows and oak woodlands were converted to agricultural lands or homesites. Nonnative plants, including noxious weeds, have been introduced and crowded out many native plants. When Lost Creek Reservoir was formed in 1977, approximately 3,400 acres of oak woodlands, shrublands, meadows, mixed conifer stands, and riparian zone vegetation were covered with water. Rare native plants that grow in the lowlands, oak woodlands, or riparian areas are the most likely to have been negatively impacted by these changes, due to loss or degradation of their habitats.

Plant community patterns that naturally follow topographical or soil type features have been artificially altered due to the checkerboard ownership. Treatments on both private and public lands follow property boundaries, resulting in habitat fragmentation which isolates plant populations and reduces gene flow between populations. Species with few or small populations are vulnerable to extirpation as a result of these altered habitat patterns.

Wildfire suppression, initiated in the early 1900s, has altered fire regimes in the watershed from their natural cycles and from pre-historic uses. Under a natural regime, fires burn unequally over the landscape, creating structural complexity that supports biodiversity. When fire is excluded, fuels build up. Fuel loads in all forest and woodland communities in the Lost Creek Watershed have increased, resulting in greater risk of high severity fires, complete tree mortality, and deep soil damage. More intense fires result in greater damage to Special Status plants and fungi. Fire exclusion has also negatively affected plants adapted to plant communities with a more frequent fire regime. Some species depend on fire for regeneration or on more open canopy conditions that occur when low intensity fires burn frequently through stands.

Logging on private and public lands over the last 60 years has also changed plant community patterns by converting some mature forest stands to younger, less biologically diverse and structurally complex stands. Although figures are not available for private land, it is assumed most private forest lands in the watershed are in early to mid-seral stages. Private timber companies own 40 percent of the watershed. Approximately 64 percent of forested BLM-managed lands in the Lost Creek Watershed are in mature (101-200 years) or old growth (201+ years) seral stages (see Table B-4).

Table B-4. Seral Stages of BLM-administered Forests in the Lost Creek Watershed		
Seral Stage	Acres	Percent
Early (0-10 years)	545	4.9
Mid (11-40 years)	1,758	15.9
Late (41-100 years)	1,738	15.7
Mature (101-200 years)	4,530	40.9
Old Growth (201+ years)	2,504	22.6
Total	11,075	100

Environmental Consequences

Effects of Alternative 1 (No Action) on Botany

Activities proposed under Alternative 1 would be “no effect” to the T&E plants *Fritillaria gentneri*, *Lomatium cookii*, and *Limnanthes floccosa* ssp. *grandiflora* because no plants occur in the treatment units. Special Status vascular or nonvascular plants would not trend toward listing because no activities would occur that could negatively impact them. There would be no potential risks to Sensitive fungi because no activities would occur that could potentially impact them.

Direct and Indirect Effects

Vascular Plants

Under Alternative 1, there would be no direct or indirect effects to Special Status vascular plants or their habitats because no physical disturbances would occur.

Conifer stands in the harvest units would continue to be overstocked, resulting in reduced tree vigor and stand health and increased fuel loads. Noxious weeds would continue to spread, especially along roads, as a result of logging on private lands and vehicular travel. The risks of damage to Special Status vascular plants in the watershed from intense wildfire or competition from noxious weeds and nonnative plants would remain unchanged from current conditions.

Nonvascular Plants

Under the No Action Alternative, there would be no direct or indirect effects to Special Status nonvascular species because no physical disturbance would occur.

Fungi

It is unknown if there are Sensitive fungi in the proposed treatment units. Although habitat requirements for the 10 species documented or suspected in the Medford District are not well known, they are believed to be associated with late-successional forests. Under the No Action Alternative, late-successional forests on BLM-administered lands in the Lost Creek Watershed would remain in their current condition, unless a wildfire occurs. If rare fungi are present in the harvest units, they would not be directly or indirectly impacted by harvest activities, road or landing construction, or changes in environmental conditions as a result of removing overstory trees. However, stands would remain overstocked and vulnerable to stand-replacement fires that damage soil and mycorrhizae. If they burned at high intensity levels, they would return to an early seral stage and would not provide suitable habitat for Special Status fungi for 80+ years.

Cumulative Effects

It is anticipated timber harvest, grazing, road building, recreation, and development would continue in the future on private lands which could result in the loss of rare plants or fungi. Special Status plants receive no protection on private lands, but are protected on BLM-administered lands according to ESA and BLM policies and regulations.

Nonnative plants and noxious weeds would continue to spread throughout the Lost Creek Watershed as a result of harvest activities on private lands, agriculture, livestock grazing, and vehicular traffic, whether or not timber harvest occurs in the Flounce Around units. On BLM-administered lands, noxious weeds would continue to be treated under the Medford District *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14*.

Under the No Action Alternative, no harvest would occur and no future timber sales are planned on BLM-administered lands in the watershed. The amount of mature and old growth forests would remain unchanged or increase as stands move from mid- to late seral stages, unless there is a high severity wildfire. Hazardous fuels reduction has been completed on 537 acres of BLM-administered land in the Flounce Around project area and 1,390 more acres will be treated in the next 2 years. These treatments will reduce the risk of damage to Special Status plants in the event of intense wildfire on 15.3 percent of BLM- land in the Lost Creek Watershed. Alternative 1 would not contribute additional negative cumulative effects to Special Status plants or fungi in the Lost Creek Watershed.

Effects of Alternative 2 on Botany

Activities proposed under Alternative 2 would be “no effect” to the T&E plants *Fritillaria gentneri*, *Lomatium cookii*, and *Limnanthes flocossa* ssp. *grandiflora* because no sites occur in proposed harvest units. The proposed activities would not trend toward listing Special Status vascular or nonvascular plants because no vascular plant sites occur in the harvest units and non-vascular plant sites would be protected. Because of their rarity throughout the Pacific Northwest Forest Plan area, it is unlikely that Sensitive fungi are present in the proposed harvest units and the risk of impacting them is low.

Direct and Indirect Effects

Vascular Plants

Because no Special Status vascular plants occur in the proposed timber harvest units, no direct effects would occur from timber harvest, temporary spur or landing construction or ripping, or post-harvest slash burning proposed in Alternative 2.

Special Status vascular plants in the watershed could be indirectly negatively affected if the harvest activities resulted in an increase in noxious weeds near existing sites. Construction of temporary spur roads and landings and ingress and egress of equipment into harvest units could introduce or spread noxious weeds into areas not already occupied by them. Noxious weeds could negatively affect Special Status plant populations by competing with them for water, sunlight, space, and nutrients. Project design features (PDFs), such as using native grass seed and weed-free straw for seeding and mulching ripped areas and requiring equipment that would travel off-road to be weed-free, would reduce the potential for introduction or spread of noxious weeds.

Although no Special Status vascular plants were discovered in the proposed harvest units, they provide potential habitat for expansion of existing populations from adjacent areas. Under Alternative 2, 405 acres would be thinned through selective or density management harvest which would reduce canopy cover from 90-100 percent to 40-60 percent. Thinning forest stands improves the health and resiliency of the remaining trees against natural disturbances by reducing competition for light, nutrients, space, and water. Special Status vascular plants that grow in forest habitats generally require lower temperatures and higher humidity that are associated with canopy cover, in comparison with species that grow in open habitats. However, they also require light to conduct photosynthesis and produce food reserves. Stands with 80-100 percent canopy cover generally have low understory plant cover and species diversity. For example, *Cypripedium montanum* generally grows in stands with 60-80 percent canopy cover (Seevers and Lang 1998, 9). Thinning stands in the Lost Creek Watershed would improve their suitability as habitat for Special Status vascular plants. As the remaining healthy trees grow, canopy closure would increase and habitat conditions would be favorable for occupation by Special Status vascular plants. Improving stand health and reducing fuel loads would also lower the risk of mortality or damage to Special Status plants from intense wildfire.

Nonvascular Plants

The Bureau Tracking lichen *Leptogium cyanescens* was discovered in a proposed density management unit which would be tractor logged under Alternative 2. Because the site was buffered with a 100-foot buffer, there would be no direct impacts to the lichen or its habitat from logging equipment or tree falling. Reducing canopy cover in forest stands results in increased temperatures and decreased humidity. The buffer would also protect the population against potential indirect effects of changing the microsite conditions when the overstory trees are removed.

Fungi

It is unknown if Sensitive fungi occur in the harvest units. Habitat associations are not well known for them, but are described as late-successional conifer forests. Because habitat associations have only been generally described for the 10 Sensitive fungi documented or suspected in the Medford District, suitable habitat for them may exist in the proposed Flounce Around harvest units. However, the probability that they are present is low because they are naturally rare. The nearest known populations of the 4 species documented in the Medford District are approximately 18-35 miles away.

In the absence of complete information about the presence of Sensitive fungi in the Flounce Around treatment units or the consequences of the proposed activities on species viability, the best available information based on habitat

condition, proposed treatments, and similar species or species groups' response to disturbance was used to evaluate the effects of the action alternatives.

If Sensitive fungi are present in the proposed Flounce Around harvest units, they could be directly or indirectly impacted by the harvest activities. Harvest has varying degrees of adverse impacts to rare fungi, depending on the level of tree removal and ground disturbance. Potential effects include disturbance or loss of the mycelial network and connections, loss of host trees necessary to sustain fungi, changes in microsite conditions (temperature, humidity, and light intensity), reduced soil moisture and organic soil layer, soil compaction, and loss of CWD to serve as a source of moisture in dry months. Potential results of these effects include changes in fungal species composition, decreased fungal species diversity and biomass, temporary reduction in sporocarp (mushroom) and spore production, or extirpation of populations.

The main and most extensive parts of fungi consist of below-ground mycelial networks which reside in the top few inches of mineral soil. They are often connected to multiple trees through their root systems. Activities that remove, disturb, or compact the top layer of organic material and mineral soil can negatively impact fungi that occur there. In one study, fungal mycelia networks ranged in size from 5-88 feet (1.5-27 meters) (Dahlberg and Stenlid 1995). Mycelia networks could be disrupted by equipment during timber harvest, construction or ripping of roads or landings, or by removal of host trees that sustain the ectomycorrhizae. These impacts could result in a loss of fungal species diversity and abundance (Amaranthus, et al. 1996). In Alternative 2, 3 miles of temporary spur roads and 10 landings would be constructed, then ripped, seeded, and mulched after harvest was completed.

Tractor logging presents more potential risk of ground disturbance and compaction and effects to fungi than cable, helicopter, or skyline logging. Under Alternative 2, 379 acres would be harvested by tractor, 31 acres by cable, and 93 by helicopter. Potential impacts from tractor harvest would be localized and reduced by designating existing skid roads with a minimum of 150 feet apart (see Section 2.xx, Project Design Features, Timber Harvest). This would restrict soil disturbance to less than 12 percent of the area in a unit. Fungal mycelia could survive if they were missed or only partially damaged during harvesting, if their host trees remained, and environmental conditions were favorable for their persistence.

Sensitive fungi could also be directly impacted from radiant heat during burning of post-harvest slash piles. Effects of pile burning would include damage or death of mineral soil fungi including the mycelia and spores; loss of litter, organic matter, and large wood resulting in reduced moisture retention capability; and loss of nutrient source. These impacts can result in changes in fungal species diversity and abundance.

Fungi are also indirectly affected by changes in environmental conditions after timber harvest. Reducing canopy cover results in lower humidity, increased light, and higher air temperatures. Hotter, drier conditions inhibit sporocarp production and fungal persistence. Luoma, et al. (2004) looked at the effects of different levels and patterns of green-tree retention on ectomycorrhizal sporocarp production. The results of the study suggest that a combination of dispersed and aggregated (grouped) green-tree retention is desired when sporocarp production is the goal. This mix of retention patterns reduces the effects of a distinct edge between forest stand and harvested areas, particularly for temperature and moisture. In the study, total fall mushroom biomass decreased significantly in the stands where green-tree retention patterns were 40 percent aggregate, 15 percent dispersed, and 15 percent aggregate compared to the 75 percent aggregate and 40 percent dispersed treatments and the control. Sporocarp production was nearly eliminated from the stands where only 15 percent of green trees were retained in an aggregate pattern. Regeneration and shelterwood prescriptions leave 15 percent green-tree retention, which is the minimum standard set by the Northwest Forest Plan. Density management and selective cut prescriptions retain between 50 percent and 75 percent dispersed green-trees. Under Alternative 2, 405 harvest acres would retain 50-75 percent of their green-trees in a dispersed pattern and 98 acres would retain 15 percent of their green-trees in a dispersed pattern. If rare fungi occurred in the Flounce Around harvest units, they might persist in the density management and selective cut units, but would be less likely to persist in regeneration units.

Converting late-successional conifer stands to an early seral stage as a result of regeneration harvest could also potentially indirectly affect Sensitive fungi by reducing the amount of suitable habitat across the landscape for these species. Approximately 64 percent (7,034 acres) of BLM-administered forests in the watershed are currently 100+ years old. Under Alternative 2, 7 percent (503 acres) of BLM-administered forested stands over 100 years old in the watershed would be harvested. Approximately 2 percent (98 acres) of existing mature and old growth forest on BLM-administered lands would revert to an early seral stage.

Cumulative Effects

It is anticipated that timber harvest, grazing, road building, recreation, and development would continue in the future on private lands in the Lost Creek Watershed and that these activities could result in the loss of rare plants or fungi. It is also assumed that forests on private lands are in an early seral condition and would not provide habitat for Special Status species associated with late-successional forests. Special Status plants receive no protection on private lands, but are protected on BLM-administered lands according to ESA and BLM policies and regulations.

Nonnative and noxious weeds would continue to spread throughout the Lost Creek Watershed, as a result of harvest activities, agriculture, livestock grazing, and vehicular traffic on private lands, whether or not timber harvest occurs in the Flounce Around units. On BLM-administered lands, noxious weeds would continue to be treated under the Medford District *Integrated Weed Management Plan and Environmental Assessment OR-110-98-14*.

Hazardous fuels reduction has been completed on 537 acres of BLM land in the Flounce Around project area and 1,390 more acres will be treated in the next 2 years. These treatments will reduce the risk of damage to Special Status plants on 15.3 percent of BLM-administered land in the Lost Creek Watershed.

No additional cumulative effects to Special Status vascular and nonvascular plants are anticipated as a result of the proposed activities under Alternative 2 because proposed treatment areas were surveyed, no Special Status vascular plants were discovered in the treatment acres, and the Special Status nonvascular site would be protected from direct and indirect effects of the proposed harvest activities. Noxious weeds could be introduced or spread during project implementation, but project design features would reduce those risks.

The cumulative impact of Alternative 2 to Sensitive fungi would be a loss of 98 acres, or 1.4 percent, of BLM-administered forest stands 100 years or older in the watershed. However, the proposed harvest would occur on matrix lands, which are designated for timber production and harvest. Of the 8 million acres of late-successional forest in the Northwest Forest Plan Area, approximately 14 percent are in matrix and are available for harvest; 86 percent are reserved in Late-Successional Reserves (LSRs), congressionally reserved and administratively withdrawn areas, and Riparian Reserves. It is estimated that over the next 50 years, late-successional forest would develop at 2.5 times the rate of loss through stand-replacement fires and harvest (USDA and USDI 2004b, 109-111). The reserve system spread across the landscape is intended to provide protection and development of late seral habitat for the protection and expansion of rare plants associated with late-successional habitat (USDA, USDI 2004c, 11). Under the Northwest Forest Plan, at least 15 percent late seral forest in a 5th field watershed must be maintained (USDA and USDI 1994, C-44). Under Alternative 2, approximately 62.6 percent of forest stands 100+ years old would remain in the Lost Creek Watershed after harvest of the Flounce Around units occurred.

The 2004 FSEIS determined that habitat, including known sites, for 8 of the 10 former Survey & Manage fungi for which Surveys are Not Practical (*Boletus pulcherrimus*, *Gastroboletus vividus*, *Dermocybe humboldtensis*, *Ramaria spinulosa* var. *diminutiva*, *Phaeocollybia californica*, *Rhizopogon chamaleontinus*, *Rhizopogon ellipsosporus*, and *Rhizopogon exiguus*) is insufficient to support stable populations in the Northwest Forest Plan area (see Table B-6).

For 7 of the 8 species, “this outcome is not due to federal actions but other factors such as: (1) limited potential habitat and few populations on federally managed lands; (2) potential for stochastic events; (3) low number of individuals; (4) limited distribution; and (5) narrow ecological amplitude” (USDA and USDI 2004b, 124). Because habitat is insufficient to support stable populations and this state is not due to federal actions, the Flounce Around proposed timber harvest would not change the species viability condition (based on habitat) for 7 of the 10 species.

For 1 of the 8 species (*Phaeocollybia californica*), the outcome of insufficient habitat is due to land management activities, such as soil disturbance and loss of host trees (see Table B-6). Known sites of *Phaeocollybia californica* are not substantially protected by reserves and loss of even a few known sites could adversely impact persistence within the Northwest Forest Plan Area (USDA and USDI 2004b, 154). Because habitat is insufficient to support stable populations and is due to management, the Flounce Around proposed timber harvest treatments could adversely affect the viability of *Phaeocollybia californica* if populations were present and impacted by the harvest activities. However, because this species is rare across the Pacific Northwest Forest Plan area, it is unlikely that it is present in the proposed harvest units and the risk of impacting populations is low.

For 2 of the 10 former Survey & Manage fungi for which Surveys are Not Practical (*Phaeocollybia olivacea*, *Phaeocollybia oregonensis*) habitat, including known sites, was determined to be sufficient to support stable populations in the Northwest Forest Plan area (see Table B-5). These species would stabilize in a pattern similar to or different from their reference distribution because a substantial number of known sites are located in reserves or are managed under an Agency's Special Status Species Program (USDA and USDI, 2004b, 152). Because habitat is sufficient to support stable populations, the Flounce Around proposed timber harvest treatments would not change the species viability condition for these two species.

Table B-5. Former Survey & Manage Fungi - Surveys Not Practical Species in Reserves			
Scientific Name	Number of Sites in NWFP¹	Number of Sites in Reserves²	Percent in Reserves
Habitat Not Sufficient – not due to federal action			
<i>Boletus pulcherrimus</i>	36	5	13.9
<i>Dermocybe humboldtensis</i>	4	1	25.0
<i>Gastroboletus vividus</i>	4	2	50.0
<i>Ramaria spinulosa</i> var. <i>diminutiva</i>	1	0	0
<i>Rhizopogon chamaleontinus</i>	1	0	0
<i>Rhizopogon ellipsosporus</i>	3	0	0
<i>Rhizopogon exiguus</i>	5	3	60.0
Habitat Not Sufficient – due to management			
<i>Phaeocollybia californica</i>	30	5	16.7
Habitat Sufficient			
<i>Phaeocollybia olivacea</i>	93	19	20.4
<i>Phaeocollybia oregonensis</i>	11	5	45.5
SOURCE: ISMS database 11-20-04, Handbook to Strategy 1 Fungal Species in the NWFP, Handbook to Additional Fungal Species of Special Concern in the NWFP, Medford District data.			
"Reserves" includes Late-Successional Reserves, Owl Cores, Riparian Reserves, and Congressionally Reserved Areas.			

The FEIS assumed that conducting pre-project clearances, managing known sites, and conducting general inventories would be the strategies for management of these 10 fungi species (USDA and USDI 2004b, 150-152).

Effects of Alternative 3 on Botany

Activities proposed under Alternative 3 would be “no effect” to the T&E plants *Fritillaria gentneri*, *Lomatium cookii*, and *Limnanthes floccosa* ssp. *grandiflora* because no sites occur in proposed harvest units. The proposed activities would not trend toward listing Special Status vascular or nonvascular plants because no sites occur in harvest units. Because of their rarity throughout the Pacific Northwest Forest Plan area, it is unlikely that Sensitive fungi are present in the proposed harvest units and the risk of impacting them is low.

Direct and Indirect Effects

Vascular Plants

No direct effects from harvest activities would occur to Special Status vascular plants under Alternative 3 because no sites are present in the units.

Potential indirect effects would be the same as those described under Alternative 2.

Nonvascular Plants

No direct or indirect effects to Special Status nonvascular species are expected under Alternative 3 because no sites occur in the proposed harvest units.

Fungi

The same potential direct and indirect effects could occur to Sensitive fungi from the activities proposed in Alternative 3 as those described under Alternative 2, although fewer acres would be impacted. Only 348 acres would be thinned and 6 acres of late-successional forest would be regeneration harvested and returned to an early seral stage. Construction of 2.1 miles of temporary spur roads and 9 landings would occur. The roads and landings would be ripped, seeded, and mulched after use.

Cumulative Effects

Cumulative effects from the activities proposed in Alternative 3 would be the same as those described under Alternative 2, except fewer acres (354) would be affected by the treatments. The harvest activities would not contribute additional cumulative effects to Special Status vascular and nonvascular plants because no sites occur in the units. Project design features would reduce the possibility of harvest activities adding to the current level of noxious weeds and impacting Special Status vascular plants in the watershed.

Alternative 3 would contribute fewer cumulative effects to Sensitive fungi because less late-successional habitat would be affected. Only six acres of late-successional conifer forest would revert to an early seral stage as a result of regeneration harvest. Construction of 2.1 miles of temporary spur roads and 9 landings would occur. The roads and landings would be ripped, seeded, and mulched after use. Because of their rarity, it is unlikely Sensitive fungi would occur in the 354 acres proposed for harvest and the risk is low they would be impacted.

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Appendix C

Wildlife Report

Affected Environment

The proposed projects are within the Lost Creek 5th field Watershed. For a more complete description of the existing environment, see the Lost Creek Watershed Analysis (completed 1998). There are several special land designations for wildlife in the Flounce Around Project Area within the Lost Creek Watershed. These include: three northern spotted owl (NSO) activity centers within the project area boundary; one late-successional connectivity block (T33S, R1E, Section 1), one “Big Game Winter Range and Elk Management area” north of Lost Creek Reservoir, and one northern spotted owl designated critical habitat unit (CHU OR-34), approximately 8,000 acres in the northwest portion of the project area.

When the project was in the early planning stages, Survey and Manage requirements were in effect. Consequently, surveys for great gray owls, red tree voles and mollusks were done to interagency protocol in place at the time. No red tree voles or great gray owls were found. No Survey and Manage or special status mollusks were found in the timber sale units.

The Survey and Manage Record of Decision removed Survey and Manage Standards and Guidelines effective April 21, 2004 (USDA and USDI 2004). The list of special status species known to be present in the Medford BLM district was updated with the latest information from the Oregon Natural Heritage Program information in 2004 and again in March 2005. The updated special status species list was reviewed and impacts from the proposed Flounce Around Timber Sale actions were analyzed (see Special Status Species of Concern, Flounce Around Project Assessment, Table C-1).

Suitable goshawk habitat has been surveyed. Two suitable peregrine falcon cliffs were checked, the bald eagle nest was monitored, and other potential eagle nest sites were checked for eagle presence.

Threatened and Endangered Species

Bald Eagle

There are two known bald eagle nests near the Lost Creek Reservoir. These nests are considered to be the same site. The original nest site location has been vacant since 1997 and is no longer considered an active site. The alternate nest has been active since 1998. The active nest is on US Army Corps of Engineers land adjacent to BLM.

Bald eagles have been seen at the north side of the reservoir, but no additional nests have been found to date. Individual bald eagles have also been observed in the project area during the winter months.

Northern Spotted Owl

The proposed timber sale would be covered under the Rogue River/South Coast Biological Assessment FY 04-08 for Activities that may affect listed species in the Rogue River/South Coast Province for Medford District BLM, Rogue River and Siskiyou National Forests dated 11 July 2003 and the Biological Opinion (FWS) 1 -15-03-511 dated 20 October 2003.

Three northern spotted owl sites within the project area have designated activity centers. The activity centers are 100 acres of the best habitat near the center of activity of each pair or resident single site which was known on January 1, 1994 (USDI 1995, 39; USDA and USDI 1994, 10). Two additional northern spotted owl sites (MSN #4465 and MSN #4617) were located after January 1, 1994. These sites do not have designated activity centers. However, the nest locations would be buffered and protected from proposed timber harvest. One additional northern spotted owl site with a designated activity center is located north of the project area and is within the provincial radius (1.2 miles for the Cascade Province) of a proposed timber sale unit. BLM biologists have monitored these sites for several years.

Flounce Around Timber Sale EA

A lawsuit in 2004 (*Gifford Pinchot Task Force v. USFWS*) questioned whether northern spotted owls were being adequately protected by actions within critical habitat units. The assumption was that the actions in CHU were not adequately addressed in 1998 and 1999 USFWS Biological Opinions.

CHU was designated as part of the 1992 draft recovery plan for the northern spotted owl. However, prior to completion of the northern spotted owl recovery plan, the NWFP was adopted. NWFP Option 9 was determined by USFWS to provide habitat for the northern spotted owl:

“Critical habitat was identified by the FWS to provide primary constituent elements for the northern spotted owl. These elements include habitat features that support spotted owl nesting, roosting, foraging, and dispersal. The US Forest Service and Bureau of Land Management provided an alternative proposal to provide these important life requirements through LSR, riparian reserves and other land use allocations and activities under the NWFP [Option 9]. The FWS acknowledged this plan adequately provided habitat for northern spotted owl recovery in their biological opinion on the NWFP (1994). All activities within the Action Area are consistent with the NWFP” (USFWS BA 11 July 2003 BA-74).

The NWFP ROD states *“management direction and land allocations of these standards and guidelines of the NWFP are intended to constitute the Forest Service and BLM contribution to the recovery of the northern spotted owl”* (USDA and USDI 1994, A-2). The Medford District ROD/RMP and NWFP provide a network of LSRs, 100-acre activity centers, connecting riparian corridors, connectivity blocks, and 15 percent late-successional forest retention in the 5th field watershed.

The Elk Creek LSR (RO 224) was established under the NWFP in 1994; 74 percent (5,920 acres) of CHU OR-34 was incorporated into the LSR. The remaining 26 percent (2,080 CHU acres) were not included in the LSR. They were not carried forward into the NWFP as “critical habitat” because Option 9 was considered by USFWS to adequately provide habitat for northern spotted owl recovery in their biological opinion. However, the “critical habitat” designation by USFWS was never officially removed from these lands. This included lands in Sections 5, 7, and 18 in T34S, R2E and Sections 1, 11, 12, 13, 14, and 15 in T34S, R1E.

In July 2002, the Timbered Rock Fire burned in OR-34. Although the Timbered Rock Fire occurred within the Elk Creek 5th field watershed, approximately 180 acres burned in the Lost Creek 5th field watershed. Approximately 10 acres of suitable spotted owl habitat within the Lost Creek-Elk Creek 5th field watershed boundary was burned. The Timbered Rock Fire had no discernable impact to the spotted owl habitat present in the Lost Creek 5th field watershed.

T33S, R1E, Section 1 is an ROD/RMP designated connectivity block. ROD/RMP recommendations are to maintain 25-30 percent of late-successional forest in the connectivity block. Harvest has been deferred in 305 acres of the best late-successional habitat in the section.

Other Wildlife

Northern Goshawk

Timber stands that appeared most likely to provide suitable goshawk habitat were surveyed using current interagency protocols in the project area during the past three years. Approximately 550 acres have been surveyed. Two years of surveys were completed in 2002 and additional surveys were done in 2003 and 2004. Early surveys were also conducted in 1997 when the project area was being considered for another sale plan.

Two northern goshawk nests were found within the project area. One nest is located within a northern spotted owl activity center. This section is also a designated connectivity block and 25 to 30 percent of the late-successional forest would be reserved to provide late-successional habitat. In the designated connectivity block, 305 acres of the best late-successional habitat have been deferred from harvest at this time.

The second nest is located within ¼ mile of a proposed timber harvest unit. BLM guidance (USDI IM OR-98-012) recommends providing a 30-acre buffer around a goshawk nest. Eighty acres around the nest would not be entered for harvest. This would meet Medford District ROD/RMP guidance to protect all goshawk nest sites (USDI 1995, 57). The nest would be buffered and a seasonal restriction for activities within a ¼ mile of the nest would be in place from March 1 to August 30.

Pacific Fisher

USFWS published a finding in April 2004 that a petition to list fishers as a “Federally Threatened” species was warranted but precluded by higher priority listing actions. The species remains a USFWS candidate species (USFWS April 8, 2004, 18770). There is no management strategy available at this time. They remain Bureau Sensitive on the BLM special status species list.

Fishers use a variety of habitats, including 5-10 year old regeneration harvest and heavily thinned stands which have large residual trees associated with them, either within the stands or at the edge. In general, the habitats used by fishers are forest woodland landscape mosaics that include conifer-dominated stands.

Fisher occurrence is closely associated with low to mid-elevation (generally less than 4,000 feet) forests with a coniferous component, large snags or decadent live trees and logs for denning and resting, and complex physical structure near the forest floor to support adequate prey populations (Aubry and Lewis 2002). Researchers in the Southwestern Oregon Cascades found that fishers will use recovering clearcuts for foraging (Raley 2004).

In a study in Northern California on extensively managed private forest lands, fishers were present. They were found to be associated with large, residual forest structures (snags, logs, and live trees). They had more fisher detections in areas of logs, hardwoods, and areas where patches of larger trees were left on the landscape (Diller 2004). They use areas that have been harvested if patches of habitat with residual components are left in the landscape.

Fishers are known to be present on the south side of Lost Creek Lake in the eastern part of the Lost Creek 5th field watershed. They were tracked during a radio-telemetry study done by Pacific Northwest Research Station from 1995-2002. No fishers have been documented in the area of the proposed Flounce Around Timber Sale.

Cavity Nesters

Flammulated owls are on the USFWS list of Birds of Conservation Concern (USFWS 2002, 31). One survey route was conducted for flammulated owls within the Lost Creek Watershed in 1995. No flammulated owls were detected, but they could occur in the Lost Creek Watershed. Flammulated owls have been observed in adjacent watersheds within the past two years. NWFP standards and guidelines for snags and green-tree replacements for woodpeckers and other primary cavity-nesting species, as provided by the existing ROD/RMP for woodpeckers, would provide for flammulated owls (USDA and USDI 1994, C-47).

Neotropical Migratory Land Birds

Neotropical migratory birds are present during spring, summer, and early fall. Four neotropical migratory birds on the USFWS Birds of Conservation Concern list are present in the Lost Creek 5th field watershed: flammulated owl, rufous hummingbird, Lewis’ woodpecker, and olive-sided flycatcher. Another bird on the same list, the white-headed woodpecker, is not present in Butte Falls Resource Area, but could be a transitory visitor.

Environmental Consequences

Effects of Alternative 1 (No Action) on Wildlife

Direct and Indirect Effects

Threatened and Endangered Species

The No Action Alternative would have “no effect” on the bald eagle.

The No Action Alternative would have no immediate effect on the northern spotted owl. Due to competition for nutrients and light in the dense, overstocked stands in the project area, it would take longer for large overstory trees to develop into good nesting habitat. Under the No Action Alternative, there would be no effect to northern spotted owl because no suitable northern spotted owl habitat would be removed or altered (see Table C-1).

Alternative	Suitable NSO habitat			Suitable CHU habitat		
	Proposed for Entry	Downgraded to Unsuitable	Downgraded to Dispersal	Proposed for Entry	Downgraded to Unsuitable	Downgraded to Dispersal
No Action	0	0	0	0	0	0
Alternative 2	467 acres	98 acres	369 acres	150 acres	83 acres	67 acres
Alternative 3	353 acres	6	347 acres	0	0	0

Other Wildlife

With the No Action Alternative, wildlife habitat and populations would continue at current trends. Without the proposed treatments of the timber stands, current levels of habitat would be allowed to develop naturally. Snag and CWD recruitment would continue to increase naturally and would provide additional habitat in the long-term for species associated with snags and CWD.

Without the loss of habitat from timber harvest, a long-term increase in productivity for late-successional dependent species is expected to occur. Some areas that would not be thinned would develop late-successional characteristics at a slower rate. Without the treatment of encroaching conifers and decadent brush development, a long-term decrease in productivity for open grassland and early seral shrub land dependent species is expected to occur.

Cumulative Effects

No change is expected from current trends within the watershed. Nonfederal lands would be harvested and most would remain in early to mid-seral conditions. In the Lost Creek Watershed, 73 percent of the BLM-administered forest is 80+ years old.

Since 1990, new threats to northern spotted owls, such as barred owls, West Nile virus, and sudden oak death, have emerged and increased the risk to the species. Barred owls, invasive competitors to the northern spotted owl, have been located in the Lost Creek Watershed. Barred owls may be more of a habitat generalist and occupy a wider diversity of habitat types than northern spotted owl. Spotted owl may respond to barred owls by avoidance; however the rate and extent of spotted owl displacement by barred owls is unknown. It is uncertain whether this effect is increased by other issues (Courtney, et al. 2004).

Effects of Alternative 2 on Wildlife

Direct and Indirect Effects

Threatened and Endangered Species

Mandatory project design features in the USFW BO would be followed (see Project Design Features).

According to the Medford District ROD/RMP (p. 57), older forests would be retained within ½ mile of the known bald eagle nests. No timber units are planned within ½ mile of these nests. The ROD/RMP also suggests retaining 2, 80-acre areas for future nest sites. The Lost Creek Watershed Analysis recommends Sections 14 and 23 to meet this objective. In Alternative 2, the treatments in sections 14 and 23 would meet this objective. Density management is proposed on 48 acres in Section 23. This treatment would allow for the development and maintenance of large, healthy trees.

No known bald eagle nest trees, perch tree, or roost trees would be cut. Suitable eagle habitat within ¼ mile of the nest would not be removed. Large snags within ½ mile of the nest would not be cut, except as needed to protect human safety. A seasonal restriction would be in place from January 1 to August 31 for any year nesting occurs. The proposed action would not affect bald eagle nest success and recovery of the species.

Approximately 503 acres of matrix land would be treated for timber harvest. The proposed action would remove 98 acres of suitable spotted owl habitat and downgrade 369 acres of suitable habitat to dispersal only. The action

“may affect, likely to adversely affect” northern spotted owl. The action is covered under *Rogue River/South Coast Biological Opinion for Medford District Bureau of Land Management, Rogue River, and Siskiyou National Forest Biological Opinion BO 1-15-03-F-511*, dated 20 October 2003. All proposed timber harvest would occur on matrix lands and would meet the standards and guides of the Medford District ROD/RMP and the NWFP.

A seasonal restriction from March 1 through June 30 (or until two weeks after the fledging period) will be in affect for all activities within ¼ mile of known spotted owl sites, or until the sites have been surveyed and nonnesting has been determined (USDI 2003, Appendix A 3).

Alternative 2 would have a higher impact to northern spotted owls of the two action alternatives considered (see Table C-1). Alternative 2 contains the higher loss of suitable nesting/roosting/foraging and suitable roosting/foraging habitat. Approximately 467 acres of suitable northern spotted owl habitat would be entered. This proposal would remove approximately 98 acres of suitable northern spotted owl habitat through regeneration harvest. This treatment type would result in the loss of 91 acres of suitable nesting habitat and the loss of 7 acres of suitable dispersal habitat. Areas which would be treated for density management and selective cut would leave more than 40 percent canopy cover. These treatment areas would be expected to remain as northern spotted owl dispersal habitat.

Approximately 150 acres of proposed timber harvest would occur in northern spotted owl CHU OR-34. Of these, approximately 83 acres would be regeneration harvested. This would result in the greatest loss of suitable habitat in northern spotted owl CHU of the two proposed action alternatives.

Harvest is proposed within ¼ mile of northern spotted owl MSN #4465 where 3 different nest trees have been used. The nests are on matrix lands and a 100-acre activity center was not established because the site was discovered after January 1, 1994 (USDI 1995, 39; USDA and USDI 1994, C-10). Nesting was last confirmed in 1999 and spotted owls were last found using the area in 2000. Barred owls were found at the site in 2001. The area has been surveyed for northern spotted owls each year since the barred owls were found, with negative results. It is unknown if spotted owls remain in the area.

The proposed action would remove 93 acres of suitable spotted owl habitat within ¼ mile of known historic spotted owl nest trees locations in this site. No harvest is proposed within the stands where historic nests are present.

USFWS identified barred owl as a potential threat to spotted owls (Courtney, et al. 2004, 7-39). There is a perceived threat because barred owls use habitats typical of northern spotted owl habitat. They may be able to coexist through habitat segregation. Whether this will occur is unclear. The cause of the barred owl invasion is not clear. There is great uncertainty associated with the actual and potential effects of the barred owl on northern spotted owl.

Habitat loss to timber harvest is often proposed to be a major factor in northern spotted owl decline, but habitat is still present in the study areas. But some areas where northern spotted owls are in the worst decline, such as Olympic National Park, have never been harvested (Courtney, et al. 2004, 7-35). In the Gifford Pinchot National Forest in Washington, the density and impact of barred owls appears higher in areas without timber harvest (Courtney et al 2004 7-35). Although “barred owls are having a negative impact on spotted owls at least in some areas, the extent of this impact and its ultimate outcome is uncertain” (Courtney, et al. 2004, 7-43).

Alternative 2 would remove habitat within the Connectivity Block in T33S, R1E, Section 1. Regeneration harvest is proposed on 23 acres and selective cut or density management harvest are proposed on 9 acres. The 23 acres of regeneration harvest would be nonsuitable northern spotted owl habitat after harvest. However, only 10 percent of the available late-successional habitat in the section would be entered. Harvest has been deferred at this time on 305 acres of the best late-successional habitat in the section. Late-successional habitat would still be provided in 46 percent of the section. This meets the Medford District ROD/RMP requirement to maintain 25-30 percent of each block in late-successional forests (USDI 1995, 41). The connectivity block would continue to allow spotted owl dispersal across the landscape.

All proposed timber harvest would occur on matrix lands. Approximately 7,000 acres of BLM-administered lands in the 5th field watershed are mature seral stage (101-200 years old) and old-growth (101+ years old). The action would meet all the requirements of the Medford District ROD/RMP, the NWFP, and USFWS. Spotted owls would be able to disperse through the 5th field watershed between the 100-acre activity centers and larger LSRs.

Flounce Around Timber Sale EA

One of the spotted owl 100-acre activity centers has not been active since 1998. The other two have resident pairs of owls. The resident pairs are likely to remain in the 100-acre activity centers after the action, although they may not successfully produce young for a few years (10-15 years). Other sites in the Medford District have successfully produced young the year after timber harvest occurred outside the 100-acre activity centers.

Timber harvest is proposed within 1.2 miles of two spotted owl sites which do not have 100-acre activity centers because they were discovered after 1994 (MSN #4465 and #4617). These sites would be affected by timber harvest. No harvest would occur within the known nest stands of either site. All proposed timber harvest actions would occur on NWFP matrix land. These sites would continue to provide pockets of suitable spotted owl habitat (nesting/roosting/foraging and roosting/foraging) within the nest stands.

Near MSN #4465, thinning would occur on 87 acres immediately adjacent to the nest stand. These acres would be downgraded from suitable nesting/roosting/foraging to dispersal. They would likely return to suitable northern spotted owl habitat in 10-15 years. Regeneration harvest would occur on 6 acres within ¼ mile of the site. These acres would no longer provide suitable spotted owl habitat. Spotted owls were last found nesting in this site in 1999. Barred owls have been found in the site.

Timber harvest near MSN #4617, would downgrade 13 acres of suitable spotted owl roosting/ foraging habitat to dispersal. The proposed action is approximately ¼ mile from the 2003 nest location. The female at this site came from a nearby 100-acre activity center, approximately 1.5 miles to the northeast. The owls were not found to be nesting in 2004.

Due to disturbance and removal of suitable matrix habitat near the two nest sites, the sites will likely not be viable after the proposed action is completed. However, dispersal habitat would still be present after the density management and select cut actions, and the owls could disperse between the LSR and the 100-acre owl cores in the 5th field watershed and into adjacent watersheds.

Areas which would be treated for density management and select cut would leave more than 40 percent canopy cover. These treatment areas would be expected to remain as spotted owl dispersal habitat. They would be expected to provide suitable spotted owl habitat within 10-15 years.

Other Wildlife

Northern Goshawk

Goshawks would be protected from disturbance under Alternative 2 by a seasonal restriction and nest protection buffer. One nest is inside a 100-acre activity center. Harvest has been deferred at this time on 305 acres of the best late-successional habitat. Over 30 acres would not be harvested around the second nest. A seasonal restriction would be in place for actions within ¼ mile of the nest. This meets Medford District ROD/RMP requirements to protect goshawk nests.

USFWS found no evidence that goshawk population is declining in the western U.S. or that habitat was limiting the overall population. They found *“that goshawks frequently use stands of old-growth and mature forest for nesting, overall the species appears to be a forest habitat generalist in terms of the variety and age-classes of forest types it uses to meet its life history requirements”* (USFWS 1998, 35183-35184).

The proposed action would not reduce the ability of the goshawks to nest and produce young. In the Butte Falls Resource Area, goshawks have been found to nest in stands the year after the stand has been thinned with density management/select cut prescriptions.

No known nest tree would be removed. Approximately 7,250 acres of late-successional (80+ years old) forest would provide habitat in the 5th field watershed. Dispersal between 5th field watersheds would not be reduced by the proposed action. The proposed action would not reduce the viability of the goshawk population in the Lost Creek 5th field watershed.

Pacific Fisher

The proposed action would include 467 acres of forest management. Fishers use most areas which provide cover and resting sites; most of the Federal land in the watershed is considered to be fisher habitat. Approximately 9,800 acres of BLM forested acres in the Lost Creek 5th field watershed would provide habitat for fishers. Approximately 7,250 acres are 80+ years old, and 2,500 acres are old growth (201+ years).

Density management and selective cut would leave 40-60 percent canopy with variable levels of green tree retention. These stands would continue to provide large trees which could provide rest sites for fishers. All snags and CWD would remain. This would provide cover and constituent elements for the life-cycle of the fishers.

Alternative 2 would harvest approximately 98 acres with regeneration harvest. Regeneration harvest acres would not provide fisher foraging habitat for approximately five years until the brush returns to provide cover. Brush and forbs in the recovering regeneration harvest areas provide berries and support small mammal populations (squirrels, skunks, rabbits, and hares) used by fishers.

There would be disruption at different times in approximately 467 acres while the timber harvest is occurring, but the areas with density management and green tree retention would continue to provide resting sites, snags, and CWD that could be used by fishers when the action is completed.

The proposed action would not be expected to cause direct mortality of any fishers. There would be a disturbance from the action due to timber harvest activities and loss of habitat in the regeneration acres. However, fishers could move out of the area if they are present when the action is ongoing. Fishers have large home ranges. The average female home range is approximately 6,000 acres (25 km²). Male home ranges were estimated to be 36,000 acres (147 km²) during the breeding season and approximately 15,000 acres (62 km²) during the nonbreeding season (Aubrey and Raley 2002, 4).

Approximately 9,800 acres of mid-, late, and mature seral and old growth forest are present on BLM-administered land in the Lost Creek 5th field watershed. The timber harvest would remove 98 acres through regeneration harvest. The remainder of the thinned acres could still be used by fishers. Snags, CWD, and 40-60 percent canopy cover would remain in these units. Denning habitat would be provided in Riparian Reserves, 15 percent late-successional retention, 100-acre activity centers, and stands not currently being entered. The proposed action would not be expected to reduce the viability of the fisher population in the Lost Creek 5th field watershed.

Cavity Nesters

Alternative 2 would lead to greatest loss of future snags and CWD due to the higher number of acres proposed for regeneration harvest. Current levels of snags and CWD would remain on-site. Most larger trees in the regeneration harvest acres would be removed and the stands would have fewer large trees to produce snags and CWD in the future. Density management and selective cut acres would continue to provide a supply of future snags. Riparian Reserves, LSR, 100-acre activity centers, and stands not entered for harvest would provide snags for future generations of cavity nesters.

Flammulated owls are cavity nesters that use cavities created by woodpeckers or occurring naturally in snags and live trees. The standards and guidelines of the NWFP for snags and green-tree replacements for woodpeckers and other cavity-nesting species would provide for flammulated owls (USDA and USDI 1994, C-47).

The Medford District ROD/RMP and NWFP standards and guidelines for Matrix lands would be met in the regeneration harvest acres. Under all proposed actions, some snags may need to be felled for safety reasons, but would be left as coarse woody material.

There would be a loss of some cavity nesting habitat, due to snags being felled for safety reasons. This could disrupt the nesting/breeding cycle for some cavity nesters, depending on the season the unit is harvested, but this is expected to be inconsequential to cavity dwelling species at the watershed level. Areas adjacent to the action would remain intact. The impacts to the cavity nester populations are low and the proposed action would not reduce the persistence of cavity nester species in the watershed.

Neotropical Migratory Land Birds

Approximately 98 acres of late-successional habitat are proposed for regeneration harvest under this alternative. This would remove hiding cover and nesting habitat for neotropical birds that use older forests. Riparian buffers, untreated areas, 100-acre activity centers, 15 percent late-successional habitat, and connectivity block late-successional acres would preserve patches of late-successional habitat for cover and nesting birds that use late-successional forests.

Late-successional habitat would be reduced in the regeneration harvest stands. The proposed actions could disrupt some local nests during the year of the action and could cause some nests to fail. This would only occur in the year of the harvest. Hiding cover and late-successional habitat would be available throughout the project area adjacent to the proposed timber harvest units. Habitat would also remain within the units commercially thinned and selective cut. There would be a reduction in the understory habitat through harvest actions.

Habitat would be improved within the thinning units for species that use the open understory, such as flycatchers. Olive-sided flycatchers forage at the edge of clearcuts, perching on large trees and snags at the edge of the forest. Harvest would not reduce these habitat elements and would improve foraging for the flycatchers.

Lewis' woodpeckers are associated with oak woodlands, oak-pine grasslands, and cottonwood forests. These areas would not be entered for harvest in the Flounce Around Timber Sale.

Snags would be left to meet the life requirements for Lewis' woodpeckers and olive-sided flycatcher hunting perches. The viability of these species would not be impacted by the timber harvest proposed in Alternative 2.

An increase in early seral habitat would increase the amount of flowering forbs and shrubs in the regeneration harvest areas. This would improve conditions for rufous hummingbirds by providing increased nectar-producing flowers. Thinning would improve conditions by opening up the understory for species that forage in open forest understory, such as the flycatchers. The proposed action is not expected to affect long term population viability of any Neotropical bird species. Proposed activities would not lead to the need to list any of the species as Threatened and Endangered (see Table C-2).

Timber harvest would decrease late-successional habitat on 98 acres. There would be an increase in 98 acres of habitat for early-seral dependent species. Habitat for late-successional species would not be expected to recover until late-successional characteristics recover in 80 to 100 years. Habitat and connectivity for late-successional species would be provided by Riparian Reserves, northern spotted owl 100-acre activity centers, and LSR patches in the matrix.

Effects of Alternative 3 on Wildlife

Direct and Indirect Effects

Threatened and Endangered Species

Impacts to eagles would be the same as Alternative 2.

Under Alternative 3, no spotted owl CHU would be entered so there would be no impact to CHU.

Harvest would occur on 353 acres of suitable NSO habitat (see Table 3.5). The action would have no effect on the productivity of the spotted owl 100-acre activity centers located within the proposed action area because no timber harvest is proposed within the provincial radius (1.2 miles) of the activity centers.

Timber harvest near the sites with no 100-acre activity centers south of Lost Creek Lake would be the same as Alternative 2. Due to disturbance and removal of suitable matrix habitat near the two nest sites, the sites will likely not be viable after the proposed action is completed. However, dispersal habitat would still be present after density management and selective cut actions, and the owls could disperse across the watershed between LSRs. Dispersal would be provided by 100-acre owl cores, Riparian Reserves, and late-successional habitat retention under the NWFP. Currently, 73 percent of the BLM-administered land in the 5th field watershed is 80+ years old (late-successional) forest. This would provide dispersal habitat for spotted owls in the watershed and would allow them to disperse between the larger, regional LSRs in adjacent watersheds which were established to provide late-successional and old-growth forest ecosystems for the northern spotted owl (USDI 1995, 32; USDA and USDI 1994, A-4).

Areas which would be treated for density management and selective cut would leave more than 40 percent canopy cover. These treatment areas would be expected to remain as spotted owl dispersal habitat. They would be expected to provide suitable spotted owl habitat within 10-15 years.

This alternative would have no impact to the connectivity block in T33S, R1E, Section 1 because no harvest is proposed in the connectivity block.

Since all proposed timber harvest would be on matrix lands, the action would meet all the requirements of the RMP, NWF, and USFWS. The action would not affect the viability of the 3, 100-acre activity centers near the project area, because it is outside the provincial radius of these sites. However, 2 sites without 100-acre activity centers would have habitat reduced near the known nest trees. The sites would likely no longer have enough suitable habitat acres to support successful nesting. The sites would still provide dispersal habitat and spotted owls could disperse through the areas between the LSRs and 100-acre activity centers in the 5th field watershed and into adjacent watersheds.

Other Wildlife Species

Northern Goshawk

The thinning treatment acres would be beneficial for northern goshawks. Both density management and selective cut treatments would reduce the stand density and produce more suitable goshawk habitat and provide better foraging conditions. In the Butte Falls Resource Area, goshawk nests have been found nesting in two timber sale units after the units were commercially thinned. Only 6 acres which are proposed for regeneration harvest would no longer be goshawk habitat. A seasonal restriction any year the nest is active would protect the nest and insure nesting success. The effect to the species persistence is negligible.

Pacific Fisher

The proposed action would include 300 acres of density management and 47 acres of selective cut. Canopy in these areas would be 40-60 percent. The proposed actions would leave large trees which could provide rest sites for fishers. All snags and CWD would be left in the stand. Snags that need to be felled would be left on-site.

Regeneration harvest in six acres would not provide fisher foraging habitat for approximately five years until the brush returns to provide cover. Brush and forbs in the recovering regeneration harvest areas provide berries and support birds and small mammal populations that are used by fishers as food (quail, squirrels, skunks, rabbits, and hares).

There would be disruption at different times in approximately 353 acres while timber harvest is occurring. Areas with density management and green tree retention would continue to provide resting sites, snags, and CWD after the action is completed that could be used by fishers.

The proposed action would not be expected to cause direct mortality of any fishers. There could be a disturbance from the action. However, they could move out of the area, if present. Fishers have large home ranges. The average female home range is approximately 6,000 acres (25 km²). Male home ranges were estimated to be 36,000 acres (147 km²) during the breeding season and approximately 15,000 acres (62 km²) during the nonbreeding season (Aubrey and Raley 2002 p 4).

Approximately 9,800 acres of mid-, late, and mature seral and old growth forest are present on BLM-administered land in the Lost Creek 5th field watershed. The timber harvest would remove six6 acres through regeneration harvest. The remainder of the thinned acres could still be used by fishers. Snags, CWD, and 40-60 percent canopy cover would remain in these units. Denning habitat would be provided in Riparian Reserves, 15 percent late-successional retention, 100-acre activity centers, and stands not currently being entered. The proposed action would not be expected to reduce the viability of the fisher population in the Lost Creek 5th field watershed.

Cavity Nesters

Future snags and CWD would be present because only six acres are proposed for regeneration harvest under this alternative. Minimum Medford District ROD/RMP standards and guidelines would be met. This could result in the loss of cavity nesting habitat, and could disrupt the nesting/breeding cycle for some species the year of the action if the units are harvested during nesting season.

Flounce Around Timber Sale EA

Leaving all snags and CWD in the units would protect most of the existing cavity habitat. Regeneration harvest is proposed on 6 acres in 12,622 acres of BLM land in the 5th field watershed. This would reduce the future snag and large tree habitat. This would be such a small part of the watershed that the impacts would be negligible from regeneration harvest.

Within the density management and selective cut units, impacts to the cavity nester populations would occur during the time of the action. There could be loss of some nests during the year of the action if it occurs during the nest season. Most snags and CWD would remain on-site and development of large trees in the units would create future snags in these areas. The action, while potentially disturbing a small number of individual cavity-dependent animals during the year of the action, would not reduce the persistence of cavity nester species in the watershed.

Neotropical Migratory Land Birds

Under Alternative 3, six acres are proposed for regeneration harvest. Buffers for special status species (in ongoing fuels projects) would preserve small patches of habitat for cover and nesting birds. Riparian Reserves, small leave patches, and 100-acre activity centers would continue to provide habitat for the late-successional dependent species.

The species that use open forests with open understories, such as flycatchers, would benefit from density management and selective cut which opens the understory. Regeneration harvested areas would provide a small amount of habitat for early-seral species, such as hummingbirds. Habitat for woodpeckers would be provided by snag levels that would meet NWFP requirements (USDA and USDI 1994, C-46, 47).

No snags are proposed for harvest except those that pose a human hazard to workers. As mentioned above, minimum Medford District ROD/RMP guidelines would be met to provide snags for cavity nesting species. The proposed action would not reduce the persistence of any Neotropical bird species from timber harvest actions proposed under Alternative 3.

Cumulative Effects for All Action Alternatives

Northern Spotted Owl

A status review of the northern spotted owl was released in September 2004 (Courtney et al, 2004). This report consists of a critical review and synthesis of recent information on the status of the spotted owl. It was prepared to provide USFWS with information for the 5 year status review. A USFWS 5 year review summary (U. S. Fish and Wildlife Service 2004) concluded that the species continues to warrant the protection of the Endangered Species Act as a threatened species.

The emergence of barred owls as invasive competitors, West Nile virus, and sudden oak death as new threats to spotted owls suggests an increase in risk to the species since 1990. Barred owls may be more of a habitat generalist and occupy a wider diversity of habitat types than spotted owl. Spotted owl may respond to barred owls by avoidance. The rate and extent of displacement of spotted owls by barred owls is likely occurring, but the rate and extent of this are unknown, and, further, whether this effect is exacerbated by other confounding issues is uncertain (Courtney, et al. 2004).

These newly identified threats are poorly understood, are likely to be pervasive, and would be difficult to alleviate. These threats are of uncertain magnitude and effect. Timber harvest would not have any known additive effect. However, the increased risk from these new threats was not sufficient to change the status of the spotted owl (USFWS 2004, 55).

The proposed timber sale would occur on matrix lands and meets the requirements outlined in the NWFP. One hundred-acre activity centers are designated LSR, and would not be entered. These activity centers, Riparian Reserves, and 15 percent late-successional habitat retention were designed to mitigate timber harvest effects by providing for well-distributed patches of late-successional forest that serve for dispersal of mobile species, such as the northern spotted owl.

Range-wide, the northern spotted owl population experienced an average decline of 3.7 percent per year from 1985-2003 (USFWS 2004, 14). However, within the Tyee, Klamath, and South Cascades study areas in southwestern

Oregon, the spotted owl populations appear to be stable (USFWS 2004, 13-14). Habitat loss due to timber harvest was identified as the paramount threat in 1990 (USFWS 2004, 54).

The rate of suitable habitat loss due to timber harvest on private, state, and federal forest lands declined between the late 1980s and the early 1990s (USFWS 2004, 24). The harvest rates of suitable habitat on BLM lands in Oregon was 3 percent per year (22,000 acres) in 1990 and dropped to 0.52 percent per year (4,911 acres) by 2003 (USFWS 2004, 28). During this period of declining rates of habitat loss, the spotted owl populations in southwestern Oregon appeared to be stable. The rate of habitat loss due to timber harvest on federal lands is expected to be less than four percent per decade (USDA and USDI 2004, 111).

Since the harvest rate on federal lands in Oregon is expected to remain low for the foreseeable future, it is reasonable to expect the northern spotted owl population would remain stable in southwestern Oregon. The harvest of less than 100 acres of suitable habitat and the short-term degradation of approximately 350 acres of suitable roosting and foraging habitat associated with the proposed project are included as part of the BLM timber harvest program in southwestern Oregon. In addition, it is estimated that within the NWFP area, habitat in-growth is occurring at approximately 8 percent per decade (600,000 acres per decade) over the baseline condition established in the NWFP (USFWS 2004, 26).

Private forest lands and federal, nonreserved matrix lands will not develop into suitable spotted owl habitat given the management objectives for those lands. The private lands are managed in compliance with the ESA and were not included in the designation of northern spotted owl critical habitat. Nonfederal lands continue to be harvested and most would remain in early to mid-seral conditions. This would benefit species that depend on these seral stages, including sharp shinned hawks, Neotropical birds, quail, skunks, squirrels, rabbits, and hares.

Approximately 80 percent of federal land within the NWFP area is reserved from regeneration timber harvest (USDA and USDI 2004, 111) and will develop into suitable owl habitat. Managed, mid-seral stands on federal, nonreserved matrix and on private lands would offer dispersal quality habitat to spotted owls that may be used as connectivity between blocks of late-seral habitat contained within the federal reserves.

In the Lost Creek 5th field watershed, which includes the proposed project:

- The BLM administers 12,930 total acres.
- The amount of forested acres totals 9,876 acres (excluding nonforest, low site, and noncommercial forest).
- A total of 7,249 acres contain forests over 80 years old.
- In BLM-administered conifer forests, 73 percent is over 80 years old.

Past timber harvest in the watershed has reduced habitat for spotted owls. In the 1920s, 65 percent of the forest stands were classified as large conifer stands. In the 1940s and 1950s, small areas were clearcut (approximately 20 acres) with 1,800 acres harvested in various levels. In the 1960s through the 1980s, timber harvest rates increased as 1,683 acres were clearcut. Data are not available about the amount of this forest that was suitable spotted owl habitat. There are no data available about the number of northern spotted owls present in the watershed on private or Federal lands during these years.

However, the clearcut acres would not provide any habitat for late-successional species, including dispersal for spotted owls. These acres are currently between 25 to 45 years old and may provide some dispersal habitat, but would not provide suitable spotted owl habitat for approximately 20-30 more years. These acres would provide habitat for other mid-seral species, such as sharp-shinned hawks, neotropical birds, and other species.

In the past 10 years, after the Medford District ROD/RMP and the NWFP were adopted, only 2 acres have been clearcut and 168 acres regeneration harvested. Since the 1995 ROD/RMP, 1,298 acres were treated with overstory removal and commercial thin. Most of these acres would provide dispersal habitat for spotted owls and meet matrix land requirements under the ROD/RMP and NWFP. There are approximately 98 acres being harvested under current timber sales in the Lost Creek 5th field watershed. No timber sales are currently planned in the watershed for the next five years.

The proposed project would not incrementally affect the stability of the northern spotted owl population in southwestern Oregon since the rate of habitat loss is substantially reduced, there is substantial in-growth of habitat, and newly identified threats are independent to the proposed action.

Other Wildlife

The assessment of the NWFP implementation effects on the fisher was that there was a 63 percent likelihood of achieving an outcome in which there is sufficient quality, distribution, and abundance of habitat to allow the fisher population to stabilize and be well-distributed over Federal lands. The NWFP was designed with a network of reserves of late-successional forests surrounded by younger, managed forests. *“Fisher populations are believed to have declined on Federal lands within the range of the NSO, primarily for two reasons, both of which are related to the widespread conversion of old-growth Douglas-fir forests to young plantations: loss of habitat due to forest fragmentation resulting from clearcutting designed in a staggered-setting prescription, and removal of large, downed coarse woody debris and snags from the cutting units.”* (USDA and USDI 1994, Vol. II, J-2 – J-469).

Many known locations for the species are outside late-successional reserves, and it is possible that harvest of such forests may cause lower extirpation of populations (USDA and USDI 1994, Vol. II, J-2). The specie’s range includes 34 percent nonfederal lands (USDA and USDI 1994, Vol. II, J-2 – J-470). Although the NWFP may provide suitable habitat that is well-distributed on federal lands, fisher populations may never respond and be well distributed because of (1) their apparently low rates of recolonization of restored habitats after local extirpation, (2) the lower amount of federal land at lower elevations, and (3) their natural rareness (USDA and USDI 1994, Vol. II, J-2 – J-470).

The area provides habitat for Pacific fisher. Within the Lost Creek 5th field watershed, there are 7,249 acres of late-successional habitat and approximately 9,800 acres of total forested acres on BLM land. Fishers appear to use a variety of habitats. Seventy-three percent of the BLM lands are over 80 years old. These lands would provide habitat, foraging, hiding, and denning for the Pacific fisher.

Since the regeneration harvest units are scattered throughout the watershed and 73 percent of the watershed is over 80 years old, the proposed actions would not increase the need to list the fisher as T&E. The proposed action would not reduce the persistence of the population present in the southwestern Oregon Cascades, although they may remain naturally rare.

In April 2005, a review of all special status wildlife species that could be present in the watershed was completed. An analysis of the impacts from the proposed timber harvest was made (see Table C-2).

The proposed actions, while potentially adversely disrupting local individuals of sensitive wildlife species and causing loss of habitat in some cases, are not expected to affect long-term population viability of any Bureau Sensitive wildlife species known to be in the area. Activities under all alternatives would not lead to the need to list sensitive wildlife species as T&E.

Table C-2. Special Status Species of Concern Flounce Around Project Impact Assessment				
Species	Status	Range	Presence	Conclusions
Foothill yellow-legged frog	BA	Yes	Present	Foothill yellow legged frogs are closely confined to the vicinity of perennial streams. (Leonard, et al. 1993, 136). There are no suitable creeks in any of the units. There would be no impacts to foothill yellow-legged frogs from proposed activities.
Northwestern pond turtle	BS	Yes	Present	Northwestern pond turtles are present in Lost Creek Lake. Lost Creek Lake would be buffered with 2 site potential trees from the high water mark. Areas near the lake could be used for nesting. There are no known sites in or near the timber sale units. No turtles have been observed in the units. The timber sale would have negligible impacts to the population in Lost Creek Lake.
Oregon spotted frog	FC	No	Absent	N/A. The proposed project is outside the range of Oregon spotted frog.
Bald eagle	FT	Yes	Present	One active nest is present within the project area between Lost Creek Lake and Hwy 62. The nest is monitored and protected. No proposed timber sale action would occur within ½ mile of the active nest. A seasonal restriction from Feb. 1-August 15 would protect the nest. No known roost or nest trees would be removed. Impacts would be negligible and would not affect eagle recovery. The action is covered under BO #1-15-03-F-511, 20 October 2003.
Northern Goshawk	BS	Yes	Present	Protocol surveys were done in the watershed. Two known goshawk nests were found and would be protected. Both are outside any timber sale unit. Proposed activities would be predominantly commercial thin and density management. Temporary disturbance could occur, but known nests would be protected and the action would be inconsequential to the species population and/or habitat at the watershed scale.
Northern spotted owl	FT	Yes	Present	Some proposed units are in CHU OR-34. The area is surveyed annually. Proposed actions would not preclude dispersal. Known sites would be monitored. Proposed action would be negligible and would not preclude the survival and recovery of the spotted owl. The action is covered under BO #1-15-03-F-511, 20 October 2003.
Fisher	BS	Yes	Suspected	No surveys. No records of fishers in the proposed action area. Habitat elements would remain, i.e. no snags would be removed. All existing CWD would remain. Density management would not remove constituent habitat elements. Impacts from proposed activities would not increase the need to list the fisher as T&E. The action would not affect the persistence of the species in the 5 th field watershed level.
Fringed myotis	BA	Yes	Suspected	Snags would be reserved. Adequate potential habitat exists within and adjacent to the project area. Riparian reserves would not be entered. Impacts from proposed activities are negligible to species and /or habitat at the watershed scale.

**Table C-2. Special Status Species of Concern
Flounce Around Project Impact Assessment**

Species	Status	Range	Presence	Conclusions
Pallid Bat	BA	Yes	Suspected	Snags would be reserved. Adequate potential habitat exists within and adjacent to the project area. Impacts from proposed activities are negligible to species and /or habitat at the watershed scale.
Townsend's big-eared bat	BS	Yes	Suspected	Snags would be reserved. There are no caves, mines, or structures in any proposed unit. Adequate potential habitat exists within and adjacent to the project area. Impacts from proposed activities are negligible to species and /or habitat at the watershed scale.
Great gray owl	BT	Yes	Absent	Protocol surveys in timber sale units were negative. No impacts from proposed timber sale activities.
Johnson's hairstreak butterfly	BS	No	Absent	Project is outside known range. Nearest locations are near Conde Creek, and Hyatt Lake and Oregon Gulch in the Jenny Creek (Klamath River) drainage. No records in BFRA. No known impacts.
Mardon skipper butterfly	FC	No	Absent	N/A. Project area is outside the range.
Monadenia chaceana (snail)	BS	Yes	Absent	None were found during 2004 mollusk surveys. No impacts.
Oregon Shoulderband (snail)	BS	Yes	Present	None were found during 2004 mollusk surveys in Timber Sale Units. Sites in fuels units were buffered. No impacts from proposed timber sale units.
Siskiyou short-horned grasshopper	BS	Unknown	Uncertain	May be associated with elderberry. There is no elderberry in the proposed timber sale units. The grasshoppers have never been documented in BFRA. No known impacts were identified.
Traveling sideband (snail)	BS	Unknown	Uncertain	None were documented during 2004 mollusk surveys. No known impacts were identified.
Vernal pool fairy shrimp	FT	No	Absent	N/A. Project area is outside the range.

Status:

FT (USFWS Threatened) - likely to become endangered species within the foreseeable future

FC (USFWS Candidate) - proposed and being reviewed for listing as threatened or endangered

BS (BLM Sensitive) - eligible for addition to Federal Notice of Review, and known in advance of official publication. Generally these species are restricted in range and have natural or human caused threats to their survival.

BA (BLM Assessment Species) - not presently eligible for official federal or state status, but of concern which may at a minimum need protection or mitigation in BLM activities.

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Appendix D

Soil/Hydrology

Soil

Affected Environment

The dominant soil types on the north side of Lost Creek Reservoir are derived from basalt and andesite volcanic rocks. The most abundant soils are the McNull, Medco, and McMullin soil series. These soils are primarily found in association with one another throughout the landscape.

The McNull soils are moderately deep (20-40 inches) to weathered andesitic and tuffaceous bedrock. They typically have clayey subsoil (greater than 35 percent clay content) with a loam or gravelly loam surface layer. Due to clay content, these soils are subject to compaction and slope instability. Older slumps and benches can be found in forested areas particularly where the Medco soils are found in association with them.

The Medco soils are moderately deep to highly weathered tuffaceous bedrock. These soils have been classified as fragile due to their pyroclastic parent material. They typically have high clay content (greater than 50 percent) in the subsoil with a gravelly or cobbly clay loam surface layer. These soils are considered fragile due to severe hazard for compaction, slope instability, and potentially high water tables resulting from the dense clay subsoil. Road failures (cutbank and fillslope slumping) and slope failures (benchy and hummocky topography with jack-strawed trees) are noticeable landscape features where these soil types are dominant.

The McMullin soils are shallow (less than 20 inches) to hard, fractured, andesitic bedrock. They typically have gravelly or cobbly clay loam subsoil with a gravelly or cobbly loam surface layer. These soil types are found in association with the McNull and Medco soils and rock outcroppings on the north side of Lost Creek Reservoir. Due to their shallowness and high rock content, they typically only support shrub, grasses, and forb vegetative communities. They are usually found in meadows and around the periphery of rock outcroppings. Since they have thin organic and mineral surface layers, they have rapid hydrologic response to runoff which makes them prone to gully and rill erosion from mechanical disturbance.

In Sections 31 and 35, south of the Lost Creek Reservoir, the dominant soil types are the Freezner and Geppert soil series.

The Freezner soils are very deep (60+ inches) to weathered andesitic bedrock. They typically have a gravelly loam surface and clay loam subsoil. These soils support a highly productive stand of conifer trees with compaction from management activities the most limiting factor. They are mostly found on flat benches and gently sloping hillsides. They are also found on steeper sideslopes in combination with the Geppert soils.

The Geppert soils are moderately deep (20-40 inches) to fractured andesitic bedrock with greater than 35 percent rock fragments in the subsoil. They typically have cobbly loam surface layers and extremely cobbly clay loam subsoil. This extremely cobbly subsoil restricts rooting depth and limits the waterholding capacity of this soil type. Windthrow can be a hazard on these soils. Conifer trees are typically the dominant vegetative component. They are typically found on sideslopes and narrow ridge tops.

For all soil types in this project area, soil productivity losses from compaction and displacement as a result of tractor yarding are the major impacts on the soil resource. In the past 60 years, tractor yarding has occurred throughout this portion of the watershed on both BLM and private timberlands. Studies (Wert and Thomas 1981) have shown soil compaction in southwest Oregon is very slowly improved by natural forces such as frost heaving or freezing and refreezing. Improvement of soil compaction in the forests of southwest Oregon, which primary comes from tree roots loosening the soil, may take 50 to 70 years. Due to the length in time it takes for natural improvement, soils compacted from past tractor yarding are still considered to be in a compacted condition. Based on aerial photo interpretation, an estimated 70 percent of all timberlands in this portion of the watershed have been tractor yarded in

the past. Since ripping of skid trails has only been routinely implemented on federal lands in the last 20 to 25 years and has not been observed on surrounding private timberlands in this project area, it is expected that most of this tractor yarding and associated soil compaction has gone unmitigated.

For a soil unit maps and list of soil types, see EA file attachments. The Jackson County Soil Survey conducted by the Soil Conservation Service in 1987 (Order 3 soil survey) and spot field reconnaissance were used to identify soil types and inclusions within this project area. This is the same methodology used to determine soil distribution and characteristics for the planning area of the Medford District PRMP/EIS (p. 3-9). Field investigations and aerial photo interpretation was used to determine existing compaction impacts for proposed BLM harvest units.

Environmental Consequences

Effects of Alternative 1 (No Action) on Soil

Direct and Indirect Effects

Soils would continue to be compacted from past activities. The natural improvement of compacted soils would continue at the same rate.

Cumulative Effects

Soils on BLM-administered lands would remain compacted from past activities. Soil productivity as it relates to compaction would improve slowly through natural processes. It is expected private timber lands would continue to manage their lands using tractor-based harvest systems in accordance with Oregon State Forest Practices.

Effects of Alternative 2 on Soil

Direct and Indirect Effects

Tractor yarding compacts soil and results in reduced soil productivity. The amount of compaction and associated soil productivity losses to a given tractor harvest unit are directly affected by the amount of area impacted by tractors, soil moisture content, soil texture and structure, and the amount and type of pressure and vibration applied (Adams and Froehlich, 1981).

All proposed tractor units would use designated skid trails spaced no more than 150 feet apart. Disturbance would occur on about 12 percent of the project area which would equal a maximum 6 percent soil productivity loss. This is consistent with soil compaction and subsequent soil productivity losses outlined in the Medford District PRMP/EIS (p. 4-13). Research studies concluded that soil productivity losses are equal to half the area impacted by tractors (McNabb and Froehlich 1984; Wert and Thomas 1981). In addition, PDFs requiring seasonal restrictions to the dry season, restricting tractor skidding to slopes less than 35 percent slopes, and restrictions on clayey pyroclastic soils would help in reducing soil compaction in the proposed tractor units.

Of the 379 acres proposed for tractor harvest, 34 acres (units 31-1 and 33-4) currently exceed the soil compaction threshold of greater than 12 percent impact from previous tractor entries and are not proposed for ripping of skid trails. These units are proposed for selective cut and are expected to have future entries within the next 15 to 20 years. However, upon final entry to these units, management directives state they would be ripped to improve the residual soil compaction (USDI 1995, 166).

Another 17 acres (units 4-1, 33-1, 33-2, and 33-3) currently exceed the soil compaction thresholds of 12 percent. Skid trails in these units, however, are proposed for ripping. Ripping would reduce the soil compaction and associated soil productivity losses on these units and would meet the soil compaction threshold of 6 percent soil productivity loss.

The remaining 328 acres of proposed tractor yarding units are either previously unentered stands or are under the compaction threshold of less than 12 percent existing impact from previous entries. Of the 63 acres of unentered stands proposed for tractor yarding, 18 acres (units 1-1, 1-2, and 35-4) are proposed for regeneration harvest which means all skid trails would be ripped after harvest. The remaining 45 acres of unentered stands (units 1-4, 8-2, 8-

3, 9-1 and 35-5) would use existing or designated skid trails. Soil compaction would be reduced on 18 acres and increased on 45 acres. Tractor yarding is proposed on 189 acres of stands (units 11-1, 11-4, 19-1, 23-1, 23-3, 23-5, 23-6, 33-5, 33-7, 33-8, and 35-3) that are under the compaction threshold of less than 12 percent; designated or existing skid trails would be used. The scale for soil compaction is determined on a unit-by-unit basis and maintaining designated skid trails at 150-foot spacing for each unit would meet soil compaction and associated soil productivity losses, as stated in the Medford District PRMP/EIS (p. 4-13).

According to Best Management Practices in the Medford District ROD/RMP (p.156), tractor yarding should be avoided on fragile soil types. Tractor yarding would be avoided on all but approximately 10 acres in unit 19-1 located on fragile soils. Tractor yarding would be limited in this area to one designated skid trail which would keep the amount of area impacted by tractors to less than 5 percent, for a 2.5 percent soil productivity loss from tractor yarding. This would meet the 12 percent soil compaction threshold. No other tractor yarding on fragile soils is proposed.

Soil erosion and subsequent sedimentation of streams is also a soil concern. However, soil erosion within timber harvest units is expected to be mitigated when PDFs are appropriately applied. The proposed actions include implementing PDFs, such as, restricting heavy equipment operations to the dry season to reduce compaction, restricting tractors to slopes less than 35 percent to reduce off-site sedimentation, waterbarring designated skid trails to reduce runoff, using skyline cable operations for partial log suspension to minimize soil disturbance, and implementing riparian buffers to move soil-disturbing activities away from streams. These PDFs are consistent with the Best Management Practices listed in the Medford District ROD/RMP (p. 166-168). The application of these PDFs would minimize soil erosion and subsequent sedimentation impacts.

In addition, when areas of instable or fragile soils were identified during field reconnaissance or harvest unit layout, mitigation was incorporated in the design and layout of units and the type of harvest method in order to avoid or reduce soil impacts. Mitigations included changing unit boundaries to avoid unstable areas or springs and changing logging systems from cable or tractor to helicopter yarding to minimize ground disturbance or road construction in unstable, steep or inaccessible areas. This form of mitigation avoids disturbance in these sensitive areas and aids in meeting soil objectives for soil compaction, soil productivity, and surface erosion and landsliding as determined by the Best Management Practices in the Medford District RMP/EIS (p. 166-168).

Cumulative Effects

Soil compaction would increase from proposed tractor yarding on approximately 45 acres of previously unentered stands on BLM-administered lands. Soil compaction would also be reduced on approximately 17 acres by ripping skid trails from previous tractor entries on BLM administered lands. All proposed tractor yarding acres are expected to meet the maximum of 12 percent soil compaction threshold and the 6 percent soil productivity loss because the proposed project would use pre-existing or designated skid trails or would rip all the skid trails.

Effects of Alternative 3 on Soil

Direct and Indirect Effects

Of the 239 acres proposed for tractor harvest, 26 acres (units 4-1 and 31-1) currently exceed the maximum of 12 percent soil compaction threshold. At this time, these units are proposed for selective cut and are expected to have future entries within the next 15 to 20 years. However, upon final entry to these units, management directives state they would be ripped to ameliorate the residual soil compaction (USDI 1995, 166).

All other proposed tractor units (213 acres) are located in unentered stands or have less than 10 percent area impacted from previous entries. Using designated and existing skid trails would keep each of these proposed tractor units under the expected soil compaction and associated soil productivity loss anticipated in the Medford District PRMP/EIS (p. 4-13 and 14).

All other impacts would be consistent with those analyzed in Alternative 2.

Cumulative Effects

Soil compaction would increase on approximately 42 acres of previously unentered stands on BLM-administered lands. Soil compaction would also be reduced on approximately 6 acres by ripping skid trails from previous tractor entries on BLM administered lands.

All proposed tractor yarding acres are expected to meet the maximum 12 percent soil compaction threshold and the 6 percent soil productivity loss because the proposed project would use pre-existing or designated skid trails or would rip all the skid trails.

Hydrology

Affected Environment

Introduction

The Lost Creek Watershed Analysis Unit (WAU), located northeast of Medford, Oregon, is bisected by Highway 62. The WAU covers approximately 36,290 acres and is one of many 5th field watershed analysis units which comprise the upper Rogue River drainage.

The analysis area for this proposed project is a portion of the WAU north and a small area just south of the Lost Creek Reservoir (approximately 21,400 acres or about one-third of the 5th field Lost Creek WAU). Of these acres, BLM administers approximately 10,760 acres (one-sixth of the 5th field Lost Creek WAU). This includes the Lost Creek and Flounce Rock subdrainages. This analysis area is used because the Lost Creek Dam acts as a barrier to all downstream flows and the subsequent effects that link these streams in the project area. All proposed activities are located above the dam with the exception of 2 helicopter harvest units (27.5 acre thinning unit and 21.9 acres selective cut unit) (no fragile soils) and portions of 2 tractor units on flat ground (generally less than 10 percent slope) located below the dam more than ¼ mile from any live stream.

In 1987, the Burnt Peak Fire burned 957 acres within the Lost Creek Watershed. In 2002, the Timbered Rock Fire burned 182 acres. About one-half the acres burned in the Timbered Rock Fire were a reburn of the Burnt Peak Fire. The portion of the acres burned in the Burnt Peak Fire that did not reburn in the Timbered Rock Fire has recovered in terms of vegetative cover; however, it will be another 40 to 60 years before the conifer overstory is re-established. Hydrologically, this area is considered to be near full recovery. The 182 acres burned in 2002 is still in the initial stages of vegetative recovery and remains at risk from runoff and erosion. This risk is expected to diminish within the next 2 to 4 years as the area revegetates and the soils stabilize.

Road-Related Sediment

Roads constructed for timber harvest activities are the predominant cause of accelerated erosion in forested watersheds (Rice, Rothacher, and Megahan 1972). Currently, there are 138 miles of all road types in this analysis area (see Table D-1). Of the 138 miles of road, only 34 miles (25 percent) are controlled by the BLM. The remaining roads are managed by private timber companies, US Army Corps of Engineers, Jackson County, and private land owners.

Table D-1. Miles of Roads by Surface Type within the Hydrology Analysis Area	
Road Surface Type	Miles
Natural Surface	41
Aggregate Base Course	22
Aggregate Surface Course	11
Bituminous (oil and rock surface)	23
Hard surface concrete (typically private driveways)	4
Pit Run (Grid Rolled)	2
Unknown (jeep trails and unvegetated firelines)	35
SOURCE: BLM Medford District Geographic Information System	

Approximately 4.5 miles of mostly unsurfaced roads in the analysis area previously closed or experiencing little traffic, were reopened during suppression efforts during the 2002 Timbered Rock Fire in the adjacent Elk Creek Watershed. Many of these high gradient access roads were not reblocked or were breached. Under wet winter soil conditions, traffic has destroyed much of the designed road drainage, such as water bars, water dips and culverts. This has caused damage to the road surfaces and created road-related erosion (rills, gullies) and subsequent sedimentation of the nearby stream channel.

The condition of roads and risk of sediment production is also related to proper road maintenance. Unpaved logging roads are designed to have annual maintenance to maintain drainage. Maintenance includes blading to maintain the designed running surfaces, such as crowned, insloped, or outsloped in order to prevent rill and gully erosion; clearing debris from ditchlines to prevent culverts from plugging; and maintaining adequate amounts of rock surfacing to protect running surfaces. Without this maintenance, sedimentation in nearby streams increases erosion in the running surface or increases the possibility roadways or ditchlines washing out from plugged culverts.

The magnitude and frequency of road maintenance on BLM-administered lands has declined in the last 10 years. This has led to more roads becoming degraded and at a higher risk for producing sediments. On private timberlands, roads generally do not receive maintenance to the same level as BLM-administered roads. This also contributes to the current level of road-generated sediment.

These road-related impacts are the dominant factors in determining the extent of stream sedimentation of in this analysis area. It is important to note that the BLM manages a small amount of road miles (25 percent) and can only affect a limited amount of change needed to meet the objective of reducing sediment levels.

Water Quality

No streams within the project area were identified as water quality limited on the Oregon DEQ 303(d) list.

Peak Flows

The Transient Snow Zone (TSZ) is an elevation band ranging from 3,500 to 4500 feet. This is the area where rainstorm events on accumulated snow pack, or rain-on-snow events, are most likely to increase the magnitude of peak flows in Southwest Oregon. The transient snow zone in the analysis area occupies 1,425 acres, or 6.5 percent, of the total acres (21,000 acres) analyzed. This small percentage of TSZ acres in the analysis area poses little or no risk to increase a rain-on-snow runoff event (WPN 1999).

Road Densities

Road density in the analysis area is approximately 4.1 miles per square mile. Roads contribute to increases in peak flows by intercepting rainfall and subsurface flows on the road surface and transporting much of this water through ditchlines into stream channels (Thomas and Megahan 1998). Higher magnitude and frequency of peak flows can alter stream morphology and subsequently destabilize stream banks and increase sedimentation rates.

Environmental Consequences

Effects of Alternative 1 (No Action) on Hydrology

Direct and Indirect Effects

No management activities are proposed in the No Action Alternative. The culvert replacement proposed under the action alternatives on BLM road 32-2E-34 would not occur and the risk of channel scouring and increased sedimentation from an undersized and improperly functioning culvert would continue.

Roads actively eroding and proposed for renovation or improvement would continue to be at risk for sediment delivery into nearby stream channels.

Cumulative Effects

At this time, several road improvement projects are in the planning stages (within the next 3 years) to improve rock surfacing, restore road drainage design, and replace undersized or malfunctioning stream culverts. These projects are expected to aid in reducing road-related sediment and reduce the risk of stream channel degradation from altered flows through inadequate stream culverts in the analysis area.

The proposed culvert replacement under the action alternatives on BLM road 32-2E-34 would not occur and the risk of channel scouring and increased sedimentation from an undersized and improperly functioning culvert would continue.

Road maintenance levels are expected to remain the same on both BLM and private timber company lands.

Aside from these proposed and planned projects, there are no expected changes in the existing condition of the road-related sediment production from the roads within this analysis area.

Effects of Alternative 2 on Hydrology

Direct and Indirect Effects

In Alternative 2, 50 acres are proposed for regeneration harvest in the TSZ. This would increase the nonrecovered openings by 3.5 percent in the analysis area. Because the total percentage of TSZ acres (6.5 percent) is so small within the analysis area, this is not expected to pose a risk for increases in rain-on-snow runoff events.

No permanent roads would be constructed so there would be no increases in peak flows from increased road densities.

An undersized culvert located on BLM road 32-2E-34 would be upgraded to a 36" culvert. This would create ground disturbance within the unnamed stream channel that runs through this culvert. It is estimated that less than 10 yards of soil and rock material would enter the stream during the installation. Restricting in-stream work to the low flow season (June 15 to September 15), along with grass seeding and straw mulching of disturbed soil areas, would keep impacts local and short-term (1 year).

Implementing proposed road improvements (3 miles), renovations (25 miles), closures (4 mile), and decommissioning (1.5 miles) would reduce the risk of road-related sediments on roads proposed for these activities. These actions are designed to stabilize the drainage structures, protect running surfaces from erosion, reduce runoff and increase infiltration, and improve access needs for management activities in the future.

Decommissioning of temporary operator spurs (3 miles) and landings (10) would increase infiltration into the soil, reduce runoff, and promote revegetation of the reclaimed roads and landings.

In the short-term (1-2 years), some increases in erosion from initial disturbance and subsequent sedimentation of streams may occur in localized areas from these proposed activities. Although there is currently no site-specific data to quantify this impact, these impacts are expected to be short-term and minor in extent because the work would occur when soil moisture is low (less than 25 percent). Impacts would diminish as these areas stabilize and revegetate. In the long-term (5+ years), it is expected the proposed road work in this alternative would reduce road-related sediment.

It is expected the actions proposed in this alternative would not exceed the impacts analyzed in the Medford District PRMP/EIS (p. 4-12 – 4-16).

Cumulative Effects

The proposed road improvements (3 miles), renovations (25 miles), closures (1 mile), and decommissioning (1.5 miles) and the replacement of one 36" draw culvert would reduce the risk of road-related sediments in the analysis area because the projects would stabilize the drainage structures, protect running surfaces from erosion, reduce runoff, and increase infiltration. In the long-term (5+ years), sediment production would be reduced on the roads proposed for these activities. Proper road maintenance in the future would greatly determine how effective this reduction would be for BLM-administered roads. There is currently no site-specific data to quantify this impact.

The actions proposed in this alternative are expected to meet the objectives of the Medford District ROD/RMP, the ACS, and the Lost Creek Watershed Analysis. The total amount of road miles managed by the BLM (25%) in the analysis area is relatively small on a landscape scale. Therefore, these actions would have a limited effect on meeting the overall objective of moving sediment levels toward more reduced and less impactful levels.

Road improvement projects (not proposed under this timber sale) are in the planning stages (within the next three years) to improve rock surfacing, restore road drainage design, and replace undersized or malfunctioning stream culverts. These projects would contribute to reducing road-related sediment and would reduce the risk of streambank erosion and channel scouring from altered flows through inadequate stream culverts.

Effects of Alternative 3 on Hydrology

Direct and Indirect Effects

In Alternative 3, 12 acres are proposed for harvest in the TSZ. This would increase nonrecovered opening by one percent in the analysis area. This small percentage of TSZ acres in the watershed poses little or no risk for an increase in the magnitude of peak flows during a rain-on-snow event.

An undersized culvert located on BLM road 32-2E-34 would be upgraded to a 36" culvert. This would create ground disturbance within the unnamed stream channel that runs through this culvert. It is estimated that less than 10 yards of soil and rock material would enter the stream during the installation. Restricting in-stream work to the low flow season (June 15 to September 15), along with grass seeding and straw mulching of disturbed soil areas, would keep this impact local and short-term (1 year).

Road renovations (12 miles), road closures (4 miles), and replacement of the undersized culvert would reduce the risk of sediment production on proposed roads in the long-term (5+ years). These actions would stabilize the drainage structures and protect running surfaces from erosion and improve access needs for management activities in the future. Road and landing decommissioning of temporary constructed operator spur roads (2.1 miles) and landings (9) are not expected to contribute to road-related sediment production in the long term (5+ years). Ripping of roads and landings are expected to increase infiltration and reduce runoff, and promote revegetation of the reclaimed roads and landings.

In the short-term (1 year), some initial increases in erosion and subsequent sedimentation of streams may occur from roads where there is ground disturbance from these proposed road activities. Although there is currently no site-specific data to quantify this, these impacts are expected to be short-term and localized until these areas stabilize and revegetate. In the long-term (5 + years), the proposed road work would reduce road-related sediment. It is also expected these actions would not produce impacts beyond those analyzed in the Medford District PRMP/EIS (p. 4-12 – 4-16).

Cumulative Effects

No permanent roads would be constructed under this alternative; therefore, there would be no increases in peak flows from increased road densities. Construction of 2.1 miles of temporary operator spur roads and 9 landings would not contribute to increased runoff and associated peak flows because these roads and landings would be decommissioned after use. Ripping of the roads and landings during decommissioning would increase infiltration, reduce runoff, and promote revegetation.

Flounce Around Timber Sale EA

The proposed road renovations (12 miles) and road closures (4 miles) would reduce the risk of road-related sediments from the roads proposed for these actions.

In the long-term (5+ years), the proposed actions would contribute to improved water quality and aquatic habitat, particularly in streams in close proximity to these roads. Proper road maintenance in the future would determine how effective this reduction will be for BLM-administered roads.

In the short term (1-2 years), roads disturbed by the proposed road renovation, culvert replacement, and surface grading would be subject to erosion and subsequent sediment production. By scheduling the work to occur during the dry season when soil moisture is less than 25 percent, impacts would be minor in extent and would diminish in one to two years as these areas revegetate and stabilize. Although there is currently no site-specific data to quantify this impact, with implementation of PDFs, the impacts will not prevent meeting the stated objectives in the Medford District ROD/RMP, the ACS, and the Lost Creek Watershed Analysis.

The total amount of roads miles administered by the BLM (25 percent) is relatively small on a landscape scale; therefore, these actions would have a limited effect on meeting the overall objective of moving sediment levels toward more reduced and less impactful levels.

Road improvement projects (not proposed under this timber sale) are in the planning stages (within the next three years) to improve rock surfacing, restore road drainage design, and replace undersized or malfunctioning stream culverts. These projects would contribute to reducing road-related sediment and would reduce the risk of streambank erosion and channel scouring from altered flows through inadequate stream culverts.

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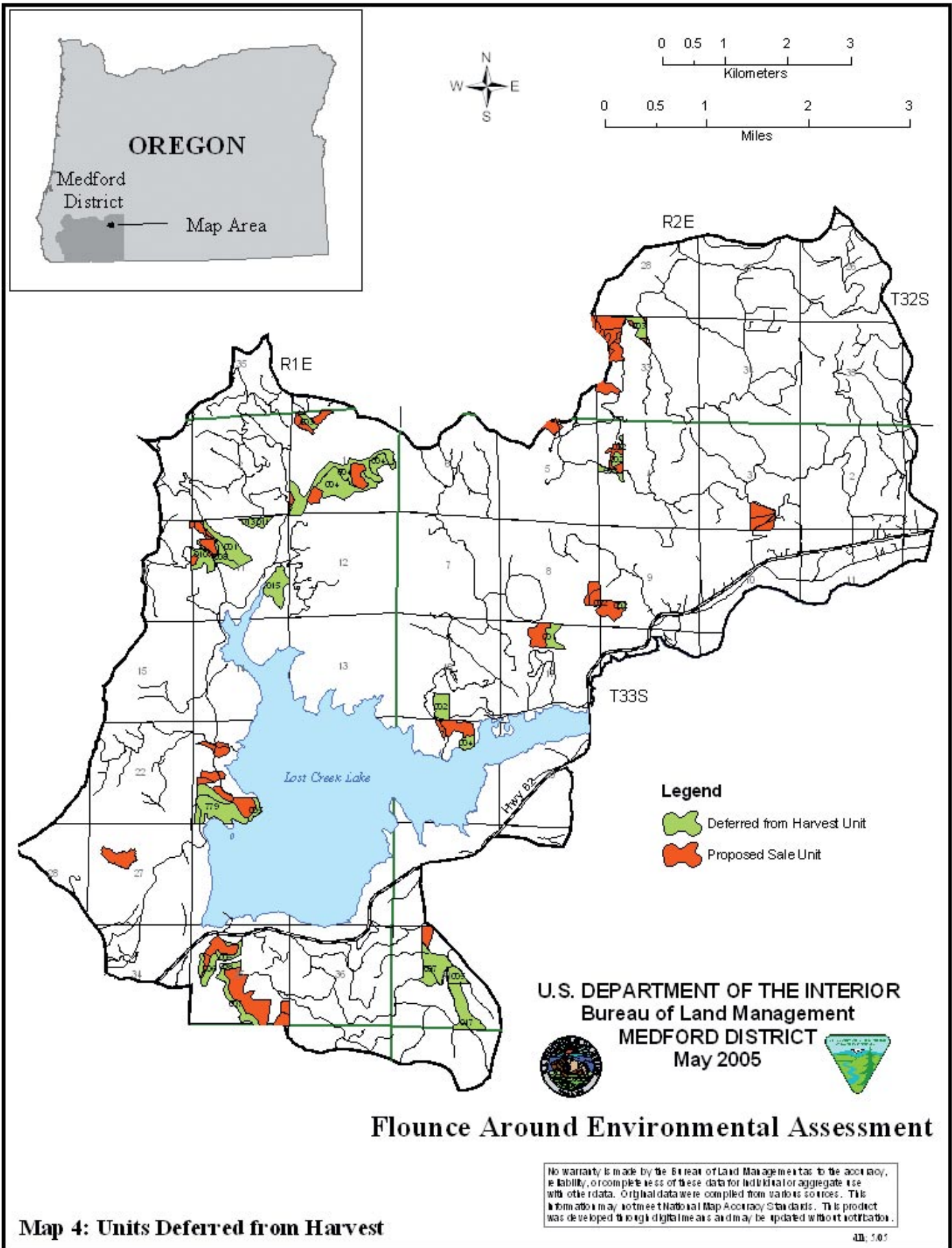
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Appendix E

Silvicultural Prescriptions, Marking Guidelines, and Stand Inventory

Approximately 645 acres were originally considered for harvest entry but were eliminated from consideration due to current stand conditions, riparian reserves, deferred watersheds, environmental education areas, or wildlife concerns (see Map 4 for unit locations). All or portions of the following operational inventory units were deferred from entry at this time (see Table E-1):

Legal Description	Operational Inventory Unit	Acres	Remarks
T32, R2E, Section 33	003	22	Riparian Reserves in northeast part of Operations Inventory (OI) and adjacent to east/west section line.
T33S, R1E, Section 1	003	14	Riparian Reserve divides OI in half.
T33S, R1E, Section 1	004	153	Riparian Reserves and an owl core, with small patches of healthy mature timber between these reserves. No treatment necessary.
T33S, R1E, Section 11	001	32	Late-Successional Reserve guidelines apply.
T33S, R1E, Section 11	008	24	Late-Successional Reserve guidelines apply.
T33S, R1E, Section 11	010	21	Riparian Reserve, two site-potential-tree widths.
T33S, R1E, Section 11	011	8	Precommercial size stand.
T33S, R1E, Section 11	013	8	The area below the spur road is predominantly precommercial size class.
T33S, R1E, Section 11	015	37	Part of the 20% retention area for the deer and elk winter range.
T33S, R1E, Section 23	005	8	Reservoir buffer adjacent to Lost Creek Lake and hiking trail.
T33S, R1E, Section 23	779	80	Reservoir buffer adjacent to Lost Creek Lake, portion is a precommercial size stand.
T33S, R1E, Section 35	005	17	Riparian Reserve, meadow buffer, and rock wall.
T33S, R1E, Section 35	006	11	Meadow buffer and Riparian Reserve.
T33S, R1E, Section 35	007	29	Meadow buffer.
T33S, R1E, Section 35	008	3	Meadow buffer.
T33S, R2E, Section 4	002	13	Riparian Reserve, complex of springs in center of OI, windthrow common, springs are also adjacent to north/south ownership line on the north end of OI.
T33S, R2E, Section 9	002	8	Environmental Education Area - Military Trail
T33S, R2E, Section 17	001	16	Primarily Riparian Reserve and Environmental Education Area.
T33, R2E, Section 18	002	24	Part of the 20% retention area for the deer and elk winter range.
T33S, R2E, Section 19	004	6	Reservoir buffer adjacent to Lost Creek Lake and hiking trail.
T33S, R2E, Section 31	005	17	Bald eagle nest site.
T33S, R2E, Section 31	007	53	Bald eagle nest site.
T33S, R2E, Section 31	017	41	Bald eagle nest site and Deferred Watershed.
	Total	645	



I. Management Direction and Objectives

1. Management Direction

On matrix lands, as defined by the Medford District RMP and the NWFP, the following objectives are to be met:

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Provide connectivity (along with other allocations such as riparian reserves) between late-successional reserves.
- Provide habitat for a variety of organisms associated with both late-successional and younger stands.
- Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags and large trees.
- Provide early successional habitat.
- Reduce tree mortality and restore the vigor, resiliency, and stability of forest stands.

2. Treatment Objectives

Implement management activities that would initiate the development of a landscape that has the ability to buffer and absorb disturbances, such as fire, insects, disease, drought, floods and potential climate change, rather than to magnify those disturbances.

To meet this objective the following management treatments are planned:

- Manage mature forest stands to develop and maintain healthy large conifer trees, favoring drought tolerant species (ponderosa pine, sugar pine, incense cedar and Douglas-fir).
- Reduce densities in overstocked forest stands to increase tree vigor and redistribute growth to the largest and healthiest trees.
- Regenerate forest stands that are declining, retaining structural and functional components and provide for the reestablishment of shade intolerant conifer species.

II. Site/Stand Condition

1. General Description of the Site

The proposed treatment area is located within Jackson County and approximately 25 to 30 air miles northeast of the city of Medford. The area is located in portions of Sections 1, 11, 23, 27, and 35 in Township 33 South, Range 1 East; Sections 32 and 33 in Township 32 South, Range 2 East; and Sections 3, 4, 5, 8, 9, 17, 19, and 31 in Township 33 South, Range 2 East.

2. Drainage/Watershed

The proposed treatment area is located within the Lost Creek and Lower Big Butte Creek watersheds.

3. Abiotic Conditions

a. Soil Type

The project area has McNull, Medco, and McMullin soil associations. McNull soils are the dominant soil association in the project area. These soils are moderately deep and well-drained. Erosion hazard is high for slopes greater than 35 percent. The underlying bedrock restricts root growth, causing a higher windthrow potential. Medco soils are

deep and moderately well-drained. Medco soils are subject to severe slumping and are considered fragile soils. A dense clay layer resists root growth and increases windthrow and compaction potential. This layer can also result in a perched water table. McMullin soils are shallow, well-drained soils containing 35 percent rock fragments. High temperature in the surface layer and insufficient moisture increase seedling mortality.

b. Site Index

Site index is the average height of the dominant trees at 50 years. Site index is relatively independent of stand density and provides a comparable measure of site productivity between different forest stands. The site index for Douglas-fir within the treatment area ranges from 63 to 104 and averages 81, based on Hann-Scrivani site index equations (Hann and Scrivani 1987).

c. Topography/Precipitation

The elevation in the treatment area ranges from a low of 1,900 feet above sea level (ASL) at the edge of Lost Creek Lake to 4,100 feet ASL near the top of Flounce Rock. Slopes over most of the project area can be classified as moderate, with most ranging from 10 percent to 50 percent. Areas with slopes greater than 55 percent occupy a small percentage of the total project area.

Precipitation amounts average from 35 to 45 inches annually. Forms of precipitation include rain and snow, with a combination of rain and snow occurring in the transient snow zone (the elevation band between 3,500 and 5,000 feet). Average dry season (May-September) precipitation is 5 to 6 inches.

d. Existing Site Problems

Fragile soils and slope stability is a concern where slopes exceed 35 percent. Specific areas of concern are scattered throughout the project area and are identified as sensitive soils in the RMP, map 6. Appendix D of the RMP provides management direction and mitigation measures when operating on these soil types.

Windthrow is a potential risk throughout the project area due to the soil types present. Two of the soil associations (McNull and Medco) have an underlying bedrock layer that restricts root growth and reduces the anchoring function that roots provide. Where these soil types occur, the risk of windthrow is higher, particularly on ridges, in saddles, and in areas with perched water tables.

The high evapotranspiration demand during prolonged hot and dry summer days causes greater tree stress particularly in overstocked forest stands. Plants require at least 75 percent water content in functional cells (Bradford and Hsiao 1982). During hot, dry periods, the uptake of moisture can not keep up with the loss through transpiration. When this occurs, the plant closes leaf stomates to maintain adequate cell water content. With the leaf stomates closed, carbon dioxide is not taken into the plant through photosynthesis and the conversion of carbon dioxide and water into carbohydrates, or “food,” does not occur. Without the creation of “food,” the life processes of the tree are interrupted resulting in increased tree stress and a higher risk of insect attack or disease infection. Reduced resin flow in water stressed trees, enables insects to successfully attack the tree (Kramer and Kozlowski 1979).

4. Biotic Conditions

a. Plant Series

Abrupt changes in aspect, slope, soil type, and past disturbances (wildfire, insects, disease, and logging) affect forest structure and the type of tree species present. These landscape changes result in a mosaic of forest conditions. This mosaic includes different levels of canopy closure, shifting tree species dominance, and varying tree age and size classes.

Four forest plant series are present within the project area: Oregon white oak, ponderosa pine, Douglas-fir, and white fir. These plant series generally follow an elevation gradient from lowest to highest. The Oregon white oak series occupies low, hot, dry sites with shallow soils, and it is commonly found on southerly aspects. The ponderosa pine series occurs on sites with shallow, droughty soils but generally is found at slightly higher elevations than the Oregon White Oak series. The Douglas-fir series occurs at higher elevations or on sites with a more northerly aspect.

The white fir series occupies the highest elevation sites in the project area. These sites are the coolest and wettest as well as the most productive.

The Douglas-fir plant series is the most common in the project area. Ponderosa pine, sugar pine, and incense-cedar make up a small percentage of the overstory tree canopy with Douglas-fir the dominant overstory, as well as understory, tree species. Madrone and black oak are the main hardwood species. Shrub competition within this plant series is generally low to moderate following canopy opening disturbances. Shrub species present in varying amounts are ocean spray, hazel, deerbrush ceanothus, Oregon grape (dwarf and piper's), poison oak, and vine maple (at the higher elevations).

Two nonforested plant communities are also common within the project area: shrub or chaparral and meadows. The common shrub species in the shrub or chaparral community includes buckbrush, deerbrush, poison oak, and whiteleaf manzanita. Tree species may include black oak and madrone with conifer species generally lacking in the overstory. The second nonforested community is meadows. Meadows are present throughout the area and typically can be found on very shallow soils that experience hot and dry temperatures during the summer. Meadows vary in vegetative composition and may include a variety of mosses, mat forming shrubs, grasses, and herbs. Rock outcrops are also common.

b. Stand History

Portions of the proposed treatment area have been logged within the past 40 years. In the early 1950s, partial cutting of individual large trees occurred on the west side of Lost Creek Lake. During the 1960s through the 1990s, the majority of logging activity occurred near Flounce Rock in Sections 4, 5, and 33. Timber harvesting in this area consisted of partial cutting, overstory removal, clearcutting, and salvage of dead and dying trees. The last harvest entry on any site occurred in 1996, with the salvage of windthrow trees near Flounce Rock in Sections 5 and 33.

Prior to harvest activities, fire was the primary disturbance event. Frequent, low intensity fires were common on the lower elevation sites of the watershed. These fires periodically removed the smaller and less fire-resistant tree and shrub species, thereby reducing the competition between residual trees for site resources.

c. Structure Description

The majority of the stands can be classified as multi-layer, uneven-aged stands. Groups of older trees randomly occur and are representative of the role frequent fire had in the structural development of the stand; most forest stands developed multiple age classes with frequent fires. Decades of fire suppression have led to the creation of dense, stagnant understories in many forest stands. Without the natural thinning effect of low to moderate fires, the amount of understory vegetation continues to increase.

Hardwoods make up the middle layer of many stands and occur as clumps or a widely scattered stand component. Hardwoods represent an early drought-tolerant seral tree component. Competition between adjacent trees and conifer canopy closure has reduced the vigor and increased the mortality of many of the large hardwood trees.

d. Coarse Woody Debris

Coarse woody debris (CWD) provides habitat for wildlife, invertebrate, microbial, and fungal species, as well as providing for important ecological functions such as moisture retention, soil stabilization, and nutrient recycling. Within the project area, CWD amounts are low with limited amounts of decay class 1 or 2 CWD greater than 16" DBH. Decay class 3, 4, and 5 CWD greater than 16" DBH is also limited on sites below 3,000' ASL. The lack of the older decay classes may be linked to lower historic (prior to fire suppression) stand densities and the frequent wildfires that occurred prior to fire suppression. These repeated fires would have kept the understory and surface layer relatively clean and void of large buildups of woody debris.

Where CWD does occur, it will not be removed from the site and will be protected from disturbance. In forest stands identified for regeneration harvest, trees would be designated and reserved to meet CWD requirements.

e. Snags

ROD standards and guidelines require that over time, 1-2 snags per acre are present to meet the requirement for cavity nesting birds at 40 percent of potential population levels. All classes of snags will be retained as part of the silvicultural prescription. During harvest operations, existing snags will be reserved from felling where they are not a safety hazard, and where necessary, additional green trees will be reserved to meet the target levels. If a snag needs to be fallen for safety concerns, the snag will be left on-site to function as CWD.

f. Tree and Stand Health, Insects, and Disease

Laminated root rot (*Phellinus weirri*) is common in Section 33 adjacent to the Ulrich/Flounce Rock road and is causing tree decline in white fir and Douglas-fir. Areas below Willits ridge have experienced higher amounts of wind throw due to this root rot pathogen.

Stem rots (*Phellinus pini*, *Oligoporus amarus*, and *Phaelos schweinitzii*) are also present in all tree species, but do not pose a serious concern for stand health. The trees infected with stem rots enhance forest diversity by providing trees with unique structural defects that serve as plant and wildlife habitat, as well as future CWD.

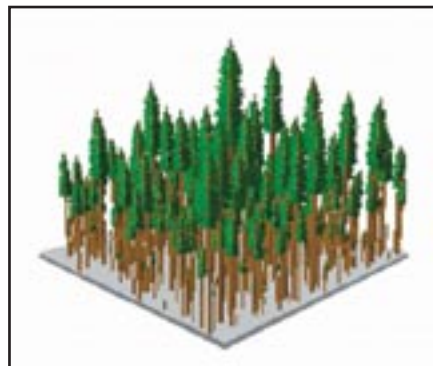
The greatest concern and impact upon individual tree and stand health is the level of inter-tree competition resulting from the high numbers of trees within many forest stands. Overstocked stands contain more trees than the site has resources (moisture, nutrients, and growing space)(see Figure 1). This condition leads to increased tree stress particularly during prolonged hot summer days without any precipitation. Decreased tree vigor is magnified during periodic drought years when the cumulative effects of below average amounts of precipitation causes the interruption of basic functional processes (photosynthesis, transpiration, respiration, translocation assimilation) over an extended period of time. In forest stands proposed for management entry, stand exams were completed to determine the “relative density.” Relative density is a measure of crowding in a stand of trees. It compares the number of trees present to the number of trees the site has resources to support. Relative density levels within the units proposed for treatment range between 50 percent and 100 percent, with an average relative density of 81percent. As a point of reference, crowns begin to close when the relative density approaches 15 percent and suppressed trees begin to die after the relative density reaches 65 percent (Perry 1994; Hann and Wang 1990). Maintaining the relative density in forest stands between a maximum of 50% and a minimum of 25 percent prevents excessive tree loss from competition.

Tree senescence or “aging” also plays a role in the condition and vigor of individual trees. As a tree increases in size and builds up a complex branch system, it shows a decrease in metabolism, a gradual reduction in the growth of vegetative and reproductive tissues, a loss of apical dominance, an increase in dead branches, slow wound healing, heartwood formation, an increased susceptibility to injury from unfavorable environmental conditions an certain insects and diseases, and a loss of geotrophic responses (growth of stems upward and of roots downward in response to gravity). A decrease in the proportion of photosynthetic to nonphotosynthetic tissue results in less carbohydrates being produced (Kramer and Kozlowski 1979). Movement of food, water, and minerals becomes more difficult as the distance from the roots to the top of the tree increases. This problem is magnified when water becomes a limiting resource in tall trees. Water deficits may cause needle and stem mortality as evident by snag tops or dead branches and needles in the upper part of the crowns.

In addition to the high numbers of trees per acre and tree aging other factors contribute to individual tree health and vigor. Factors such as, the amount of understory shrub growth, soil type, precipitation, aspect, crown position in the canopy, topography, root pathogens and insects all combine to affect tree vigor and its ability to maintain basic functional processes.

Figure 1. Present Conditions

Forest stands are overstocked with more trees than the site has water, nutrients, and growing space to sustain. Without reducing tree density levels to the carrying capacity of the site, tree and stand vigor will decline. As trees increase in size, they require more growing space and a larger volume of soil to supply an increasing need for water and nutrients.



III. Analysis in support of the prescription

The target stand reflects not only what is planned for the future but also what is expected immediately after treatment. The target stand represents optimum conditions to strive for through management.

Three types of silvicultural treatments are proposed for the project area: density management, individual tree selection, and regeneration harvest. Individual operational inventory (OI) units have been grouped under one of these categories based on the proposed treatment.

1. Density Management (DM)

See Marking Guidelines (Table E-2) for the OI units proposed for this treatment.

a. Present Conditions

Stand densities are high, with the number of trees per acre above the long term carrying capacity of the site. In the forest stands identified for this type of treatment, the average relative density is 81 percent. At relative density levels greater than 55 percent, the following tree and stand changes begin to occur: competition-related mortality becomes significant, sensitivity to the effects of drought increases, self-thinning begins, growth declines, volume growth per acre is offset by mortality, and susceptibility of trees to insect and disease attack increases. The tree species composition of these stands is a mixture of Douglas-fir and minor amounts of ponderosa pine and sugar pine. Hardwood species include madrone and black oak.

b. Target Stand - Density Management (DM)

The main objective within these stands is to improve individual tree and stand health. Harvesting within these units would be targeted toward reducing the stocking levels within those areas where overstocked conditions of sapling, pole, and mature timber exists. Density levels would be reduced by removing the suppressed crown class trees and increasing the spacing of the intermediate and dominant/codominant crown classes. Remaining trees would have crown ratios greater than 35 percent and would be the better formed trees. Ponderosa pine, sugar pine, incense-cedar, and Douglas-fir would make up the preferred leave species. Large (greater than 20" DBH), healthy ponderosa and sugar pine would be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35 percent, needles should be dark green, crown tops should be pointed (not rounded), and there should be no evidence of resin flow on the upper bole of sugar pine. The residual crown closure of these stands would range within 50 percent to 60 percent.

Large (greater than 12" DBH), healthy hardwoods (madrone and black oak) would remain as a scattered stand component. Removal of competing trees would provide the necessary top light required for the continue growth of these trees.

Special status species may occur within the stands. These species would be buffered and protected. These buffer patches would provide for additional stand structural diversity.

All stage 1 and 2 snags greater than 20" DBH would remain for wildlife, future CWD, and structural diversity.

Figure 2. Target Stand for Density Management

Stand structure following density management.

This is a visual reference only; results will vary from stand to stand.



Table E-2. Density Management Treatment Schedule	
Year	Density Management Treatment
0	<p>Harvest</p> <ul style="list-style-type: none"> Thin from below first, removing the suppressed component of the stand, followed by the thinning of the main canopy to reduce densities and to remove any insect or disease infected, or otherwise declining, trees (based on crown ratio and form). Healthy conifer trees less than 8" DBH not competing with healthy trees larger than 8" DBH would be thinned at an approximate 14' spacing (space off of existing leave trees). Madrone clumps would be cut or girdled to the largest stem, when not in direct competition with residual conifers. Residual stocking would range from a relative density of 35 to 50 or more and crown closures from 5 percent to 60 percent. Favored leave species are ponderosa pine, sugar pine, incense-cedar, and Douglas-fir. Reserve ponderosa and sugar pine greater than 20" DBH to maintain genetic and structural diversity. Use existing and widely-spaced skid trails and directional falling to reduce impacts to the site and residual stands. Reserve 2 to 4 trees per acre of the largest hardwoods 12" DBH or greater. Hand pile heavy slash concentrations. Slash all sprung, severely damaged, spindly-crowned, low crown ratio (less than 40 percent) conifers and hardwoods between 1" and 7" DBH.
10-20	<ul style="list-style-type: none"> Conduct stand exam to assess stand conditions. Evaluate the health of the stand for excess tree mortality, reduced radial growth, and condition of large ponderosa and sugar pine to assure presence in the stands. A second thinning entry would likely occur to maintain tree vigor and species diversity.
20-50	<ul style="list-style-type: none"> Assess the stands for current objectives. Additional partial cut entries or regeneration harvest may be necessary.

2. Regeneration Harvest (RH)

Three regeneration silvicultural methods may be implemented: Structural Retention, Modified Even-aged, and Modified Even-aged in a Connectivity Block. The target stand conditions for each of these methods are the same, except for the number of trees greater than 20" DBH left. Listed below are the number of trees greater than 20" DBH to be left.

- Structural Retention: 16-25 trees per acre >20" DBH
- Modified Even-aged: 6-8 trees per acre >20" DBH
- Modified Even-aged in a Connectivity Block: 12-18 trees per acre > 20" DBH

See Marking Guidelines (Table E-3) for the OI units proposed for this treatment.

a. Present Conditions

Alternative 2 follows RMPROD guidelines using stand age to determine the timing of regeneration harvests. Forest stands would be managed using a 150-year area control rotation. The silvicultural treatments proposed in Alternative 3 are based on stand conditions and landscape objectives, rather than stand age alone.

These forest stands have been tractor logged in the past. Selective cut was the primary silvicultural method applied. This resulted in stands developing multiple tree canopy layers. The overstory tree component is declining due to high stand density levels, root pathogens, and tree senescence. Overstory tree species are primarily Douglas-fir with lesser amounts of white fir; the minor species include sugar pine, incense-cedar, and ponderosa pine.

The shrub species present across most of these units consists of Oregon grape (dwarf and piper's), deerbrush ceanothus, hazel, oceanspray, and vine maple (common in the higher elevations). In most units, shrub cover is low to moderate, occurring in patches or as a scattered vegetative component. Hardwood species include madrone and black oak. Generally, the hardwoods are widely scattered or occur in small clumps and are a minor compositional component of the stands.

Natural regeneration (seedlings and saplings) of Douglas-fir, incense cedar, and a lesser amount of white fir is present in most of these units, with density levels varying from stand to stand.

b. Target Stand - Regeneration Harvest (RH)

The minimum number of remaining large (>20" DBH), overstory green trees would vary from 6 to 25 trees per acre. Douglas-fir, sugar pine, ponderosa pine, incense cedar, and hardwood species would be the preferred leave species. In areas of laminated root rot, healthy codominant and dominant ponderosa pine, sugar pine, incense cedar, and hardwood species would be favored over Douglas-fir, when available. Leave trees would be the largest, full crowned, healthy trees.

Preharvest snags would remain and additional healthy or cull green trees greater than 20" DBH would be reserved if needed to meet the required 1 to 2 wildlife snags per acre, or to meet CWD requirements. Two to four large hardwoods per acre greater than 12" DBH would be reserved for wildlife and stand diversity. Tree form (height and crown condition) would determine which hardwoods to leave.

Special status species may occur within the stands. These species would be buffered and protected. These buffer patches would provide additional within-stand structural diversity.

To prepare nonstocked sites for tree planting, logging slash would be piled and burned along with severed shrubs and regeneration with poor crowns. Piling would be accomplished by hand or excavator. Excavator piling would occur where side slopes are less than 30 percent. To promote species diversity within these units where planting is required, a mixture of Douglas-fir, resistant sugar pine, ponderosa pine, and incense cedar would be planted following site preparation activities. Approximately 300 to 500 trees per acre would be planted. Species mix would be 70 percent Douglas-fir, 20 percent sugar or ponderosa pine, and 10 percent incense cedar. In areas of laminated root rot (T33S, R2E, Section 33), the species mix would be altered towards low susceptibility species to reduce further effects of the root pathogen. The species mix would be approximately 5 to 10 percent Douglas-fir, 70 percent ponderosa and sugar pine, and 20 percent incense cedar.

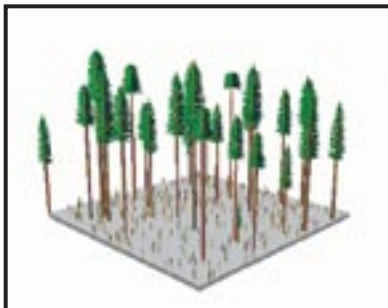


Figure 3. Target Stand for Structural Retention

Stand structure following structural retention regeneration harvest.

This illustration is a visual reference only; results will vary from stand to stand.

Figure 4. Target Stand for Modified Even-aged Regeneration

Stand structure following modified even-aged regeneration harvest.

This illustration is a visual reference only; results will vary from stand to stand.



Table E-3. Regeneration Harvest Treatment Schedule	
Year	Treatment
0	<ul style="list-style-type: none"> • Harvest: Leave target number of green conifer trees per acre greater than 20" DBH and all vigorous ponderosa pine, incense cedar, sugar pine, and hardwoods 8 to 20" DBH. • A minimum of 1.8 snags per acre (stage 1 and 2) and 120 linear feet of CWD (decay class 1 and 2, 16" x 16') would be left. • Widely spaced designated skid trails, directional falling, and log length skidding would be used to reduce site impacts. • Site preparation: Slash trees 1 to 6" DBH damaged from logging activities. Leave all healthy, unmerchantable trees. Treat brush and hardwoods either by excavator removal or slashing. Excavator or hand pile brush and slash and burn. Limit piling of logging slash to pieces less than 16" DBH. • Rip skid trails.
0-1	<ul style="list-style-type: none"> • Plant with a mix of ponderosa pine, Douglas-fir, sugar pine, and incense cedar; modify planting mix in areas of laminated root rot (T32S, R2E, Section 33). • Apply appropriate maintenance (vexar tubing, mulching, shading, scalping, baiting) treatments to insure planting success.
1	<ul style="list-style-type: none"> • Conduct 1st year survival survey. • Assess need for supplemental planting or additional maintenance treatment.
3	<ul style="list-style-type: none"> • Conduct 3rd year survey. • Assess need for replanting and/or additional maintenance needs.
5	<ul style="list-style-type: none"> • Conduct 5th year stocking survey. • Target stand will have a minimum of 280 well-spaced trees per acre. Competing vegetation will have been controlled, with trees growing rapidly.
10	<ul style="list-style-type: none"> • Precommercial thin the understory if density is more than 400 trees per acre. Favor pine species, Douglas-fir, and incense cedar. Favor ponderosa pine, sugar pine and incense cedar over Douglas-fir and white fir in laminated root rot areas. Thin to approximately 300 trees per acre.
35	<ul style="list-style-type: none"> • Average DBH is 10". Commercial thin if stand density is appropriate, otherwise delay until crown closure and competition reduces growth rates. Thin to approximately 200 trees per acre.
45-80	<ul style="list-style-type: none"> • Commercial thin, if appropriate. Favor leaving the pines, Douglas-fir, and incense-cedar.
100+	<ul style="list-style-type: none"> • Assess stand and watershed conditions for possible regeneration harvest.

3. Selective Cut (SC)

See Marking Guidelines for the OI units proposed for this treatment.

a. Present condition:

In the stands recommended for selective cut, a large percentage of the trees have good crown ratios and vigor; a smaller percentage of the trees are showing symptoms of decline (poor crown ratios, chlorotic thinning foliage, or crown form is declining). Competition between trees for limited site resources is intense, as stand densities are high. The average relative density for these stands is 83 percent. Past logging activities have created small canopy gaps that have resulted in stands with a variable stand structure. The tree species composition is a mixture of predominantly Douglas-fir, with lesser amounts of ponderosa pine, sugar pine, incense cedar, black oak, and madrone.

b. Target stand:

Following the harvest entry, these stands are composed of healthy trees of all species and diameter classes. Large healthy ponderosa pine trees have been retained to insure their continued presence in the stand. Species composition is dominated by Douglas-fir, followed by smaller amounts of ponderosa pine, sugar pine, incense cedar and large hardwoods. Vertical and biological diversity is present through the retention of trees of all ages and size classes. Special status species may occur within the stands. Patches of less than one acre would be buffered and protected.

These patches would provide for additional within-stand structural diversity. The estimated range of canopy closure is between 50 and 60 percent. CWD is present and provides conditions favorable for nutrient recycling, soil mychorrizae, and the development of nitrogen-fixing bacteria. Cull trees have been left to insure that a near-term “pulse” of CWD and snags would be available. Large (greater than 12” DBH), healthy hardwoods (madrone and black oak) would remain as a scattered stand component. Removal of competing trees would provide the necessary top light required for the continue growth of these trees.

Figure 5. Target Stand for Selective Cut.
Stand structure following a selective cut.
This is a visual reference only; results will vary from stand to stand.

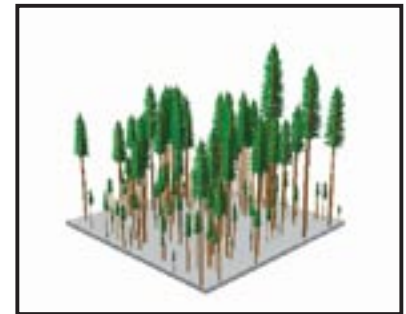


Table E-4. Selective Cut Treatment Schedule	
Year	Selective Cut Treatment
0	<ul style="list-style-type: none"> • Initial harvest: Reduce stand densities by marking risk trees in all diameter classes. Do not mark <i>any</i> trees 50” DBH or greater. Tree vigor, as defined by crown form and crown condition, is the primary factor to be used in determining risk trees. Thin even-aged pockets where appropriate. • Use widely-spaced, designated skid trails, directional falling, and log length skidding to reduce site impacts. • Treat logging slash by lopping and scattering heavy slash concentrations. • Slash all sprung or severely damaged conifers and hardwoods between 1” and 6” DBH.
10-20	<ul style="list-style-type: none"> • Conduct stand exam to assess stand conditions and to determine if any additional management treatments are needed.

IV. Monitoring

Implementation of the standard and guidelines in the NWFP ROD and management direction contained within the Medford District Proposed Resource Management Plan and Environmental Impact Statement (PRMP/EIS) requires a monitoring system to insure effective on-the-ground results. The NWFP ROD (p. E-1) states, “Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of these standards and guidelines will be monitored to ensure that management actions are meeting the objectives of the prescribed standards and guidelines, and that they will comply with laws and management policy. Monitoring will provide information to determine if the standards and guidelines are being followed (implementation monitoring), verify if they are achieving the desired results (effectiveness monitoring), and determine if underlying assumptions are sound (validation monitoring). Some effectiveness and most validation monitoring will be accomplished by formal research.”

Monitoring of the proposed actions will follow the outline in the Medford District PRMP/EIS, Volume II, Appendices 147-163. Monitoring will be specific to the land allocations and resources affected in the Lost Creek and Lower Big Butte Creek watershed sale area.

Monitoring should:

- Detect changes in ecological systems from both individual and cumulative management actions and natural events
- Provide a basis for natural resources policy decisions
- Provide standardized data
- Compile information systematically
- Link overall information management strategies for consistent implementation
- Ensure prompt analysis and application of data in the adaptive management process
- Distribute results in a timely manner

Monitoring begins with resource assessment and data collection which describes the existing conditions prior to management actions. Data collection is in the form of sampling which provides a representative description of the proposed treatment area. Stand exams were completed in the proposed sale area. Stand information was collected, using a comprehensive stand exam process. Within stands, a systematic sampling grid was used to establish plot centers. From the plot centers a variable plot and two nested fixed plots were used to record tree and site data. This information was used in a BLM stand exam program that provides a variety of analysis reports. These reports provide a description of stand characteristics and a detailed assessment of stand conditions and health. Post-harvest monitoring can then be implemented, using the pre-harvest stand information to determine if the objectives have been met.

V. Marking Guidelines

Table E-5. Summary of Treatment Objectives

Management Direction

On Matrix lands, produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability. Provide connectivity between late-successional reserves, and provide habitat for a variety of organisms associated with both late-successional and younger forests. Also, provide for important ecological functions such as dispersal or organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags and large trees. Reduce tree mortality and restore vigor, resiliency, and stability of forest stands, and provide early successional habitat.

The stands adjacent to Lost Creek Lake and Highway 62 are designated VRM Class II. Management activities within this designation “may be seen but should not attract the attention of the casual observer. Changes should repeat the basic elements of form, line color, texture, and scale found in the predominant natural features of the characteristic landscape” (USDI 1995, 70). Meeting this management guideline is the primary objective when marking in these stands. When in doubt, err on the conservative side.

Treatment Objectives

1. To reduce density levels toward the carrying capacity of the site. In second growth stands, thin from below to redistribute growth to vigorous dominant and codominant trees. In selectively cut stands, remove low vigor trees across all diameter classes to reduce inter-tree competition while maintaining or promoting the development of large trees and multiple canopy layers.
2. To favor a return to the seral phase of the Douglas-fir and white fir plant series as a long-term silvicultural approach to provide for sustainable forest conditions. Favored species should be the shade-intolerant and intermediates (ponderosa pine, sugar pine, incense cedar, Douglas-fir, and hardwood species).
3. To maintain healthy ponderosa pine and sugar pine as a stand and landscape component.
4. Maintain approximately 50 to 60 percent canopy closure in all density management and selective cut stands. This range of canopy closure will minimize canopy openings, minimize growth of understory brush, maintain connectivity, and provide a variety of plant and animal habitat across the landscape.
5. To regenerate stands with declining growth rates or deteriorating conditions and to prepare units for seedling establishment and growth by providing suitable site conditions for planting; within treatment areas retain CWD, snags, and large green conifers for long-term site productivity and biological legacies.

1. Density Management (DM)

Density reduction and the retention of approximately 50 to 60 percent canopy closure are the primary objectives for these stands. Thin from below in second growth stands/clumps, low vigor codominant or dominant trees may be removed for density reduction and if tree vigor is lower than adjacent trees.

- Stocking will be reduced to Relative Densities of 35 to 45 percent.
- Leave trees need to be dominant and codominant with the best crown ratios.
- In higher elevation stands, favor healthy ponderosa pine, sugar pine, Douglas-fir and incense cedar over white fir.
- Large (greater than 20" DBH), healthy ponderosa and sugar pine should be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35 percent, needles should be dark green, crown tops should be pointed (not rounded), and there should be no evidence of resin flow on the upper bole of sugar pine. Pine species with poor crowns characterized by a ragged appearance, as well as foliage which is bunchy and of poor color, should be removed. Do not retain.
- Trees to be removed are in excess of wildlife, CWD, and biological diversity needs.
- Leave all large fire-remnant trees greater than 50" DBH, regardless of condition.
- Leave all hardwoods.
- Leave all snags (stages 1-5).

Table E-6. Relative Density and Target Basal Area in Density Management Units by Alternative

Unit	Alternative 2		Alternative 3	
	Relative Density	Target Basal Area	Relative Density	Target Basal Area
33s-1e-01 004	35	140	35	140
33s-1e-11 010	35	140	35	140
33s-1e-23-779	40	120	40	120
33s-1e-23-005	45	140	45	140
33s-1e-27-003	40	160	40	160
33s-1e-35-006	40	140	40	140
33s-1e-35-007	40	140	40	140
33s-1e-35-008			35	140
33s-1e-35-012	35	140	35	140
33s-2e-03 003	40	160	40	160
33s-2e-05 003	45	180	45	180
33s-2e-08 005	40	140	40	140
33s-2e-09 002	35	140	35	140
33s-2e-17 004			40	140
33s-2e-19 004	35	140	35	140

Density Management Units

33s-2e-03-003

Trees per acre <8" DBH: 967 (700, 0-2" DBH: 200, 2-4" DBH: 66, 4-8" DBH)

Trees per acre >8" DBH: 225

Basal Area: 307 square feet

Canopy Closure: 100

Aspect: South

Relative Density Index: 1.00

Stand structure is multi-layered, with high stand densities.

Prescription: Density Management, favor healthy ponderosa and sugar pines where available. After yarding, thin trees less than 8" DBH and slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1 to 7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4"+) with at least 40 percent crown ratio and no chlorotic foliage. Riparian Reserve yellow/white flagging extends across the road into the unit. Northern 1/3 of the OI is tractor ground; the southern 2/3 is cable. Hand or excavator pile from skid trails on tractor ground and hand pile the rest.

33s-2e-05-003

Trees per acre <8" DBH: 0

Trees per acre >8" DBH: 128

Basal Area: 248 square feet

Canopy Closure: 87

Aspect: East

Relative Density Index: .67

Even-aged stand located on ridgeline between the Elk Creek and Lost Creek watersheds.

Prescription: Density Management leaving at least 60 percent or higher canopy closure. The higher canopy closure will meet transient snow zone objectives as well as retain the necessary structure to minimize windthrow potential. Lop and scatter.

33s-2e-08-005

Trees per acre <8" DBH: 423 (137, 0-2" DBH; 183, 2-4" DBH; 103, 4-8" DBH)

Trees per acre >8" DBH: 121

Basal Area: 225 square feet

Canopy Closure: 100

Aspect: East

Relative Density Index: .82

Adjacent to the Flounce Rock Environmental Education Area, an old military trail crosses the southern tip of the OI, and needs to be buffered (the buffer distance is 50' on each side of the trail). A Riparian Reserve needs to be buffered in the northern end of the OI.

Prescription: Density Management in an area immediately south of the Riparian Reserve. In the middle 1/3 of the OI, a scattered overstory with a dense understory (less than 8" DBH) is present. Mark the risk trees and thin the understory at a 14' x 14' spacing. The southern 1/3 is suitable for Density Management; hand pile and burn.

33s-2e-09-002

Trees per acre <8" DBH: 353 (100, 0-2" DBH; 100, 2-4" DBH; 153, 4-8" DBH)

Trees per acre >8" DBH: 118

Basal Area: 221 square feet

Canopy Closure: 99

Aspect: East

Relative Density Index: .79

The old military trail runs along the western boundary of the OI and needs to be buffered. The buffer distance is 50' on each side of the trail. The OI contains 8" DBH plus pockets to treat, otherwise sapling to pole size thickets are present under a scattered overstory. A small "bowl" with a high-water table is present in the southeastern portion of the OI, windthrow is common. Minimize management activities (marking trees and logging skidtrails) within this area.

Prescription: Density Management. Treat the understory less than 8" DBH throughout the OI, slash Douglas-fir with spindly crowns and low crown ratios, space off of existing leave trees. Spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4"+) with at least 40 percent crown ratio and no chlorotic foliage. Hand or excavator pile and burn.

33s-2e-17-001

Trees per acre <8" DBH: 673 (286, 0-2" DBH; 229, 2-4" DBH; 157, 4-8" DBH)

Trees/acre >8" DBH: 149

Basal Area: 253 square feet

Canopy Closure: 10

Aspect: South

Relative Density Index: .98

Immediately south of the east/west ownership boundary is a homesite development area. The OI is a mix of stand conditions, containing pockets of 8" DBH plus trees and areas of trees less than 8" DBH. The primary treatment objective is to reduce the fire hazard adjacent to the homesites and the Flounce Rock Environmental Education Area. The amount of trees greater than 8" DBH to be removed will be low.

Prescription: Density Management in 8" DBH plus pockets. Favor healthy dominant and codominant ponderosa pine and incense cedar. Treat trees less than 8" DBH throughout the OI; slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4"+) with at least 40 percent crown ratio and no chlorotic foliage. Hand pile and burn.

33s-2e-19-004

Trees per acre <8" DBH: 567 (271, 0-2" DBH; 83, 2-4" DBH; 21, 34-8)

Trees per acre >8" DBH: 169

Basal Area: 221 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .86

This OI is part of a proposed recreation site identified in the RMP as Seth Bullis. This management treatment would not alter the potential for recreation development in the future. The OI is a mix of stand conditions, containing pockets of 8" DBH plus trees and areas of trees less than 8" DBH. The OI has a couple of old dump sites that need to be flagged and avoided during management activities (see Craig Brown for a map). The access road to the Fire Glen Campground passes through this OI and would provide access.

Prescription: Density Management in 8" DBH plus pockets. Favor healthy pine species where available. Treat trees less than 8" DBH throughout the OI, slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Hand pile and burn.

33s-1e-1-004

Trees per acre <8" DBH: 11 trees (4-8" DBH)

Trees per acres >8" DBH: 136

Basal Area: 318 square feet

Canopy Closure: 100

Aspect: West

Relative Density Index: .84

Riparian Reserves have been flagged with yellow/white. One spring/seep, located near the north side of the unit, needs to be checked for a buffer.

Prescription: Density Management. Lop and scatter, hand pile concentrations and burn.

33s-1e-23-779

Trees per acre <8" DBH: 458 (183, 0-2" DBH; 229, 2-4" DBH; 45, 4-8" DBH)

Trees per acre >8" DBH: 111

Basal Area: 183 square feet

Canopy Closure: 90

Aspect: Northeast

Relative Density Index: .70

Meadows are adjacent to the OI. The Four Corners campground and access road are within the OI. The eastern boundary of the unit should not extend beyond the bench and parking area. Two large pockets of trees exist on either side of BLM road 33-1E-2; stand density should be reduced by removing suppressed and intermediate small diameter classes 8-20" DBH. Trees greater than 20" DBH and in excess of wildlife and future CWD needs should be removed only if exhibiting low vigor characteristics. Thin pockets of conifer reproduction. Slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Hand pile and burn.

33s-1e-23-005

Trees per acre <8" DBH: 277 (0, 0-2" DBH; 131, 2-4" DBH; 147, 4-8" DBH)

Trees per acre >8" DBH: 188

Basal Area: 234 square feet

Canopy Closure: 100

Aspect: Southeast

Relative Density Index: .82

Above the road, thin the 8-16" DBH conifer size classes. Larger size classes may be removed if exhibiting low vigor characteristics. Thin pockets of conifer reproduction; slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. East of BLM road 33-1E-27, 8-20" DBH Douglas-fir are available for thinning; vigorous ponderosa pine and sugar pine should be favored. Pines species selected for retention should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as bunchy, poor color foliage should be removed. Hand pile and burn.

33s-1e-27-003

Trees per acre <8" DBH: 229(57, 0-2" DBH; 57, 2-4" DBH; 115, 4-8" DBH)

Trees per acre >8" DBH: 113

Basal Area: 237 square feet

Canopy Closure: 98

Aspect: North

Relative Density Index: .78

This OI occupies a north aspect and is generally of good form and vigor. Density reduction by thinning trees less than 16" DBH would benefit the stand by reducing inter-tree competition; larger size classes may be removed if exhibiting low vigor characteristics. This OI is surrounded by withdrawn low site-productivity lands generally composed of oaks, manzanita, and varying amounts of Douglas-fir and lesser amounts of ponderosa pine and sugar pine. A trail originating from BLM road 33-1E-27 defines the western and southwestern boundary of the OI; leave a 25' no-cut buffer adjacent to the trail. The trail origin could not be located but the end portion is still intact. A meadow buffer may be necessary on the southern end of the OI.

Lop and scatter, handpile concentrations, and burn.

33s-1e-11-010

Trees/acre <8" DBH: 275 (183, 0-2" DBH; 92, 2-4" DBH; 0, 4-8" DBH)

Trees/acre >8" DBH: 75

Basal Area: 186 square feet

Canopy Closure: 85

Aspect: North

Relative Density Index: .65

This is a Douglas-fir stand with occasional madrone and sugar pine. The stand is mostly >8" DBH, with a light thinning of 8, 10, and 12" DBH classes available. No precommercial thinning is necessary. The slope has experienced some movement, with some pistol butt Douglas-fir present. Lop and scatter.

33s-1e-35-006

Trees/acre <8" DBH: 332 (229, 0-2" DBH; 92, 2-4" DBH; 12, 4-8" DBH)

Trees/acre >8" DBH: 97

Basal Area: 207 square feet

Canopy Closure: 93

Aspect: West

Relative Density Index: .73

Three issues affect the shape, size, and potential management of this OI: 1.) Viewpoint Mike Trail is adjacent to the western side of the unit, 2.) A buffer from the meadow above the OI extends into unit, and 3.) A Riparian Reserve, running east/west, extends into the middle of the OI. Leave a 25' no-cut buffer on either side of the trail.

Prescription: Density Management. Hand pile and burn.

33s-1e-35-007

Trees per acre <8" DBH: 478 (240, 0-2" DBH; 60, 2-4" DBH; 178, 4-8" DBH)

Trees per acre >8" DBH: 147

Basal Area: 266 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .97

This OI contains a variety of stand structures, from areas containing small diameter classes suitable for precommercial thinning, to areas containing even-aged pockets of 8" DBH plus trees. A scattered overstory of large predominant trees is also common. Wildlife trees were previously flagged in southern portion of stand adjacent to old harvest unit. These trees are to be protected with a designated buffer.

Prescription: Density Management. Vigorous ponderosa pine and sugar pine should be favored; pine species should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as bunchy, poor color foliage should not be retained. Thin pockets of conifer reproduction; slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; trees 1-7" DBH should be spaced approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Trees greater than 20" DBH and in excess of wildlife and future CWD needs may be removed if exhibiting low vigor characteristics. Minimize marking trees >40" DBH and do not mark any trees 50" DBH or greater, regardless of condition. Lop and scatter; hand or excavator pile logging slash concentrations and burn.

33s-1e-35-008

Trees per acre <8" DBH: 555 (400, 0-2" DBH; 0, 2-4" DBH; 155, 4-8" DBH)

Trees per acre >8" DBH: 93

Basal Area: 217 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .83

A small piece of this OI remains after the 300' meadow buffer has been applied. Thin pockets of conifer reproduction, slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage.

Prescription: Density Management. Lop and scatter, hand pile logging slash concentrations and burn.

33s-1e-35-012

Trees per acre <8" DBH: 114 (0, 0-2" DBH; 0, 2-4" DBH; 114, 4-8" DBH)

Trees per acre >8" DBH: 134

Basal Area: 241 square feet

Canopy Closure: 94

Aspect: North

Relative Density Index: .74

This OI is a young, even-aged, predominantly Douglas-fir stand with large black oak (24-32" DBH) as a scattered stand component (approximately 3 per acre). When the black oak has a full and vigorous crown and disease-free bole, these trees should be retained for diversity by favoring them over conifers.

Prescription: Density Management. Lop and scatter, hand pile concentrations and burn.

2. Regeneration Harvest

a. Structural Retention Regeneration Harvest

Minimum requirements are:

- 1.8 wildlife trees per acre.
- 120 linear feet of CWD.
- 16-25 green conifers >20" DBH per acre (proportionally representing the total range of tree sizes >20" DBH). These are minimum levels; where additional healthy green trees are available they should be left. Determination of leave and take trees should be based upon tree/crown vigor, as opposed to the strict implementation of the 16-25 leave tree guidelines. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). Low susceptibility to wind, snow, and ice damage measured by a height to diameter ratio of 70 or below; b). Crown ratio >35 percent with a healthy crown, dark foliage, dense needles; c). Disease-free (specifically mistletoe-free) Douglas-fir; d). Favor healthy seral species such as, ponderosa pine, sugar pine, incense cedar, where possible.
- All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine, and hardwoods, regardless of size, should be left (<1-20" DBH). These trees should have the following attributes: a). crown ratios 35%; b). healthy foliage; and c). disease- and insect -free.
- Retain all large hardwoods >12" DBH.
- Crown vigor, not tree diameter, should be the deciding factor for marking a tree.
- Diversity and patchiness is desirable; units do not have to be uniform in appearance.

Alternative 2 - Structural Retention Regeneration harvest units: 33S-2E-4-002, 32S-2E-33-003.

Alternative 3 - Structural Retention Regeneration harvest unit: 32S-2E-33-003

32s-2e-33-003 (approximately 12 acres)

Trees per acre <8" DBH: 302 (286, 0-2" DBH; 16, 4-8" DBH)

Trees per acre >8" DBH: 90

Basal Area: 254 square feet

Canopy Closure: 100

Aspect: East

Relative Density Index: .85

Laminated root rot is present throughout this stand.

Prescription: SGFMA Regeneration Harvest leaving 16-25 trees per acre, favoring incense cedar and any pines available. Plant with ponderosa pine, sugar pine, and incense cedar and protect any established hardwoods.

Excavator pile and burn.

33s-2e-04-002

The central part of this OI consists of many seeps, springs, and riparian areas. This area has been buffered and flagged in yellow. Matrix areas remaining include a small stand on the south end, a narrow strip above the riparian area, and a block on the northern end. Additional springs in the northern portion of the OI adjacent to the north/south ownership line have been buffered with yellow flagging.

Prescription: SGFMA Regeneration Harvest leaving 16-25 trees per acre, favoring incense cedar and any pines available. Plant with ponderosa pine, sugar pine, and incense cedar and protect any established hardwoods.

Excavator pile and burn.

b. Modified Even-Aged Regeneration Harvest

The minimum requirements are:

- 1.8 wildlife trees per acre.
- 120 linear feet of CWD.
- 6-8 green conifers per acre >20" DBH (proportionally representing the total range of tree sizes >20" DBH). These are minimum levels; where additional healthy green trees are available they should be left. Determination of leave and take trees should be based upon tree vigor (live crown ratio and crown form), as opposed to the strict implementation of the 6-8 leave tree guideline. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). Low susceptibility to wind, snow and ice damage as measured by a height to diameter ratio of 70 or below; b). Crown ratio >35 percent with a healthy crown, dark foliage, and dense needles; c). Disease free; d). Favor healthy seral species, such as ponderosa pine, sugar pine, and incense cedar, where possible.
- All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine, and hardwoods, regardless of size, should be left (<1-20" DBH). These trees should have the following attributes: a). crown ratios 35 percent; b). healthy foliage; and c). disease- and insect-free.
- Retain all large hardwood, >12" DBH.
- Diversity and patchiness is desirable; units do not have to be uniform in appearance.

Alternative 2 – Modified, Even-Aged Regeneration Harvest units: 33S-1E-35-008 and 33S-1E-35-012N.

Alternative 3 – Modified, Even-Aged Regeneration Harvest unit: 33S-1E-35-012N.

33s-1e-35-012

Trees per acre <8" DBH: 210 (76, 0-2" DBH; 76, 2-4" DBH; 57, 4-8" DBH)

Trees per acre >8" DBH: 107

Basal Area: 250 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .80

Approximately 6 acres in size.

Prescription: Regeneration Harvest. 6-8 trees per acre >20" DBH. Excavator pile logging slash/brush and burn; plant.

33s-1e-35-008

Trees per acre <8" DBH: 555 (400, 0-2" DBH; 0, 2-4" DBH; 155, 4-8" DBH)

Trees per acre >8" DBH: 93

Basal Area: 217 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .83

A small piece of this OI remains after the 300' meadow buffer has been applied. Thin pockets of conifer reproduction, slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; trees 1-7" DBH should be spaced approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage.

Prescription: Regeneration Harvest. 6-8 trees per acre >20" DBH. Excavator pile logging slash concentrations and burn.

c. Regeneration Harvest in a Connectivity Block

The minimum requirements are:

- 1.8 wildlife trees per acre.
- 120 linear feet of CWD.
- 12-18 green conifers per acre, >20" DBH (proportionally representing the total range of tree sizes >20" DBH). These are minimum levels; where additional healthy green trees are available, they should be left. Determination of leave and take trees should be based upon tree vigor (live crown ratio and crown form), as opposed to the strict implementation of the 12-18 leave tree guideline. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). low susceptibility to wind, snow, and ice damage as measured by a height to diameter ratio of 70 or below; b). crown ratio >35 percent with a healthy crown, dark foliage, and dense needles; c). disease-free; d). favor healthy seral species, such as ponderosa pine, sugar pine, and incense cedar, where possible.
- All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine, and hardwoods, regardless of size, should be left (<1-20" DBH). These trees should have the following attributes: a). crown ratios 35 percent; b). healthy foliage; c). disease- and insect-free.
- Retain all large hardwoods >12" DBH.
- Diversity and patchiness is desirable; units do not have to be uniform in appearance.

Alternative 2 – Regeneration Harvest in a Connectivity Block unit: 33S-1E-1-003.

Alternative 3 – Regeneration Harvest in a Connectivity Block unit: none.

33s-1e-1-003

This section is a designated connectivity block. The objectives are to provide habitat connectivity for old growth-dependant and -associated species by minimizing fragmentation of interior habitat and maintaining at least 25 percent of the section in late-successional conditions.

A Riparian Reserve divides OI 003 in the middle. The northern part contains two different stand structures.

1. Trees per acre <8" DBH: 991 (382, 0-2" DBH; 306, 2-4" DBH; 305, 4-8" DBH)
 Trees per acre >8" DBH: 120
 Basal Area: 223 square feet
 Canopy Closure: 100
 Aspect: Southeast
 Relative Density Index: .94

On the western 2, madrone 8-12" DBH and trees less than 8" DBH are the dominant structural component, with scattered overstory trees present.

Prescription: Slash all trees 7" DBH and less from under the drip-line of larger full crown overstory trees. Thin the remaining trees less than 8"; space off of existing overstory leave trees. Spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Madrone less than 8" DBH should be slashed and madrone 8-16" DBH should be girdled. Lop and scatter; hand pile concentrations and burn.

2. Trees/acre <8" DBH: 300 (229, 0-2" DBH; 57, 2-4" DBH; 14, 4-8" DBH)
 Trees/acre >8" DBH: 73
 Basal Area: 195 square feet
 Canopy Closure: 88
 Aspect: Southeast
 Relative Density Index: .68

The eastern 2 contain a mature stand with occasional small Douglas-fir reproduction patches.

Prescription: Regeneration Harvest. Excavator pile slash and burn.

The southern part of this OI is a mature stand with an occasional small Douglas-fir reproduction patch.

Trees per acre <8" DBH: 527 (412, 0-2" DBH; 46, 2-4" DBH; 69, 4-8" DBH)

Trees per acre >8" DBH: 87

Basal Area: 220 square feet

Canopy Closure: 100

Aspect: Northeast

Relative Density Index: .83

Prescription: Regeneration Harvest. Excavator pile slash and burn on tractor portion of unit; Lop and scatter and Hand pile concentrations and burn on cable portion.

3. Selective Cut

1. Reducing stand densities, removing low vigor trees, and retaining approximately 50-60 percent canopy closure are the primary objectives for these stands.
 - Dependant upon the spatial arrangement of low vigor trees, canopy closure will vary across the stand.
 - Tree selection criteria should be based upon the retention of the desired basal area with tree vigor (risk factors) used as the primary aid in determining individual trees to mark. Refer to the attached low vigor and high risk of mortality guidelines. Ideally, trees selected for removal should be proportional to their presence within the stand, although this will not always be possible. For example, if the size class distribution within a stand is 70 percent of the trees are 8-20" DBH, 20 percent of the trees are 20-32" DBH, and 10 percent of the trees are 32" DBH or greater, then the majority of the trees selected would be in the 8-20" DBH size class with lesser amounts marked in the 20-32" DBH size class and even fewer marked that are greater than 32" DBH.
 - The average residual basal area of treated stands will range between 140 to 180 square feet per acre. See below for the approximate residual basal area for each stand.
 - Clumpiness of residual trees is okay; meeting the target basal area is more important than meeting a spacing requirement. Spatial and structural variability is a desired stand condition.
 - Trees will be marked across all diameter classes. Minimize marking trees greater than 40" DBH and do not mark *any* trees 50" DBH or greater, regardless of condition.
2. Favor drought and fire tolerant tree species, such as ponderosa pine, sugar pine, incense cedar, Douglas-fir, and hardwood species. Laminated root rot occurs occasionally within the sale area, specifically in stands above 3,500 feet (T32S, R2E, Section 33 and T33S, R2E, Section 4). In this area, white fir should be discriminated against because of its susceptibility to laminated root rot and also its low tolerance of fire and drought.
3. Large (>20" DBH), healthy ponderosa and sugar pine should be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35 percent, needles should be dark green, crown tops should be pointed (not rounded), and there should be no evidence of resin flow on the upper bole of sugar pine. Pine species with poor crowns characterized by a ragged appearance, as well as bunched, poor color foliage, should be removed; do not retain.
4. Leave all hardwoods greater than 12" DBH for species diversity, canopy layers, and root disease resistance.
5. Leave all snags, stages 1-5.
6. Leave all CWD, decay classes 1-5.
7. Minimize the marking of large (>20" DBH), broken, fork top, and deformed trees. Retain for plant and animal habitat, as well as future sources of CWD and snags.

Alternative 2 - Selective Cut Units (target basal area): 32s-2e-33-003 (160); 33s-2e-31-007 (180-200); 33s-1e-01-004 (140-160); 33s-1e-11-001 (140-160); 33s-1e-11-008 (140-160); 33s-1e-35-005 (160).

Alternative 3 - Selective Cut Units (target basal area): 32s-2e-33-003 (160); 33s-2e-04-002 (160); 33s-2e-31-007 (180-200); 33s-1e-0-003 (140); 33s-1e-01-004 (140-160); 33s-1e-11-001 (140-160); 33s-1e-11-008 (140-160); 33s-1e-35-005 (160).

*** The stand data provided below is not absolute, rather it is an estimate based upon sampling. It is intended to provide a general description/measure of stand density, composition and structure. The recommendations for the treatment of logging slash may change following post harvest surveys ***

32s-2e-33-003

Trees per acre <8" DBH: 308 (250, 0-2" DBH; 28, 2-4" DBH; 30, 4-8" DBH)

Trees per acre >8" DBH: 89

Basal Area: 246 square feet

Canopy Closure: 100

Aspect: East

Relative Density Index: .83

Laminated root rot is present within this unit and is affecting Douglas-fir and white fir. No discrete pockets are identifiable; rather it occurs as a diffuse, widely occurring pathogen. Where possible, stand densities and canopy closures should be maintained at higher levels to minimize potential windthrow adjacent to laminated root rot pockets.

- Along the east/west section line, a wet riparian area runs parallel to the section line on private ownership; the buffer has been flagged in yellow. The remaining area has scattered overstory trees with many areas containing Douglas-fir saplings 8 to 20 feet in height. The brush component is well established with dogwood and vine maple 10-15 feet in height.

Prescription: Mark low vigor dominant overstory trees; leave any predominant trees 50" DBH or greater, regardless of condition. Excavator pile from skidtrails (logging slash and brush) and burn. Thin pockets of trees less than 8" DBH at 14' x 14' spacing. Plant holes with ponderosa pine, incense cedar, and sugar pine; do not plant any Douglas-fir.

- In the northeast corner, riparian areas and their buffers reduce the available matrix acres to 3, 2-acre patches. All buffer areas have been flagged.

Prescription: Selective Cut. Lop and Scatter, Hand pile concentrations and burn.

Three additional treatment areas remain in this OI, refer to map. In these areas, a selective cut is prescribed to remove risk trees. On the east side of the main ridgeline, maintain higher densities and crown closure to minimize wind throw potential. Lop and Scatter, Hand pile concentrations and burn.

33s-2e-04-002

The central part of this OI consists of many seeps, springs and riparian areas. This area has been buffered and flagged in yellow. Matrix areas remaining include a small stand on the south end, a narrow strip above the riparian area, and a block on the northern end. Additional springs are present and have been buffered with yellow flagging in the northern portion of the OI adjacent to the north/south ownership line.

Prescription: Selective Cut using an excavator and staying on existing skidtrails, remove and pile brush and logging slash in the northern block, and burn. No treatment is necessary in the southern area other than lop and scatter.

33s-2e-31-007

Trees per acre <8" DBH: 309 (214, 0-2" DBH; 0, 2-4" DBH; 95, 4-8" DBH)

Trees per acre >8" DBH: 86

Basal Area: 211 square feet

Canopy Closure: 93

Aspect: North

Relative Density Index: .73

This unit contains an undesignated recreation site that is used heavily throughout the year. Maintain this area as a recreational site by removing only hazard and low vigor trees that would pose a safety hazard within the next five years. Hand pile logging slash and burn.

33s-1e-1-003

This section is a designated connectivity block. The objectives are to provide for habitat connectivity for old growth-dependant and -associated species by minimizing fragmentation of interior habitat and maintaining at least 25 percent of the section in late-successional conditions.

A Riparian Reserve divides OI 003 in the middle. The northern part contains two different stand structures.

1. Trees/acre <8" DBH: 991 (382, 0-2" DBH; 306, 2-4" DBH; 305, 4-8" DBH)
Trees/acre >8" DBH: 120
Basal Area: 223 square feet
Canopy Closure: 100
Aspect: Southeast
Relative Density Index: .94

On the western 2, madrone 8-12" DBH and trees less than 8" DBH are the dominant structural component, with scattered overstory trees present.

Prescription: Slash all trees 7" DBH and less from under the drip-line of larger full crown overstory trees. Thin the remaining trees less than 8" DBH; space off of existing overstory leave trees. Spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Madrone less than 8" DBH should be slashed and madrone 8-16" DBH should be girdled. Lop and Scatter and Hand Pile concentrations and burn.

2. Trees per acre <8" DBH: 300 (229, 0-2" DBH; 57, 2-4" DBH; 14, 4-8" DBH)
Trees per acre >8" DBH: 73
Basal Area: 195 square feet
Canopy Closure: 88
Aspect: Southeast
Relative Density Index: .68

The eastern 2 contain a mature stand with occasional small Douglas-fir reproduction patches.

Prescription: Selective Cut. Lop and Scatter and Hand Pile concentrations and burn.

The southern part of this OI is a mature stand with an occasional small Douglas-fir reproduction patch.

- Trees per acre <8" DBH: 527(412, 0-2" DBH; 46, 2-4" DBH; 69, 4-8" DBH)
Trees per acre >8" DBH: 87
Basal Area: 220 square feet
Canopy Closure: 100
Aspect: Northeast
Relative Density Index: .83

Prescription: Selective Cut. Lop and Scatter and Hand Pile concentrations and burn.

33s-1e-1-004

This portion of the OI is on the west side of BLM road 32s-1e-27.

Prescription: Selectively cut declining overstory trees. After yarding, thin trees less than 8" DBH and slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Hand or Excavator pile from skid trails used during logging.

33s-1e-11-001

The stand has an open canopy with Douglas-fir, and occasionally ponderosa pine and sugar pine. Pini conks are present in about 20 percent of Douglas-fir. The overall crown condition of dominant and codominant trees is good. Scattered pockets that contain large trees should be thinned by removing suppressed and intermediate trees.

Prescription: Selective Cut risk trees. Vigorous ponderosa pine and sugar pine should be favored; pines species should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns

characterized by a ragged appearance, as well as bunchy, poor color foliage, should not be retained. Thin second growth pockets; slash Douglas-fir with spindly crowns and low crown ratios. Space off of existing leave trees; spacing for trees 1-7" DBH should be approximately 14' apart. Leave trees should have good leader growth (4" +) with at least 40 percent crown ratio and no chlorotic foliage. Lop and Scatter and Hand Pile concentrations near road and burn.

33s-1e-11-008

Prescription: Selective Cut. Thin pockets and precommercial thin pockets of trees less than 8" DBH. Lop and Scatter.

33s-1e-35-005

Trees per acre <8" DBH: 771 (625, 0-2" DBH; 63, 2-4" DBH; 83, 4-8" DBH)

Trees per acre >8" DBH: 138

Basal Area: 234 square feet

Canopy Closure: 100

Aspect: North

Relative Density Index: .94

This OI contains an older stand that is generally of low vigor. Within the unit there are rocky ridges and rock piles created from rock breaking away from a vertical wall on the south portion of the OI. A buffer from the upper meadow area extends into the OI. An Army Corps of Engineers survey monument is present near the eastern edge of OI.

Prescription: Light ITM removing highest risk; precommercial thin 0-8" DBH; spacing off of leave trees at a 14' spacing. Lop and Scatter and Hand Pile concentrations and burn.

Estimate the average diameter of potential leave trees and determine the desired spacing in feet by referring to Table E-7. Follow the basal area and spacing table as closely as possible. Once the area has been marked, verify the leave basal area, using a relaskop or prism, and adjust basal area as necessary. As the average diameter changes, spacing will also change holding stand density constant.

E-7. Average Diameter, Basal Area, and Spacing of Potential Leave Trees by Relative Density						
Average Leave Tree (DBH)	Relative Density - 35%		Relative Density - 40%		Relative Density - 45%	
	Leave Tree Basal Area (square feet)	Leave Tree Spacing	Leave Tree Basal Area (square feet)	Leave Tree Spacing	Leave Tree Basal Area (square feet)	Leave Tree Spacing
8"	99	12' x 12'	113	12' x 12'	127	11' x 11'
10"	111	15' x 15'	126	14' x 14'	142	13' x 13'
12"	121	17' x 17'	139	16' x 16'	156	15' x 15'
14"	131	19' x 19'	150	18' x 18'	168	17' x 17'
16"	140	21' x 21'	160	20' x 20'	180	18' x 18'
18"	148	23' x 23'	170	21' x 21'	191	20' x 20'
20"	157	25' x 25'	179	23' x 23'	201	22' x 22'
22"	164	26' x 26'	188	25' x 25'	211	23' x 23'
24"	171	28' x 28'	196	26' x 26'	220	25' x 25'
26"	178	30' x 30'	204	28' x 28'	229	26' x 26'
28"	185	32' x 32'	212	30' x 30'	238	28' x 28'
30"	191	33' x 33'	219	31' x 31'	246	29' x 29'

Characteristics of low vigor trees

1. Low vigor trees

- a. Low vigor, ponderosa pine trees are defined as those trees meeting the following criteria:
- Crowns are ragged and thin.
 - Foliage in parts of crown thin, bunchy, or unhealthy; needles average to shorter than average in length.
 - Needle color poor to fair.
 - Some twigs or branches lack foliage and some twigs or branches are fading or dead.
 - Localized weakened parts of crowns present.
 - Crown top is rounded, and the crown width is narrow or flat on one or more sides.
- b. Low vigor Douglas-fir and white fir trees are defined as:
- Crown has thin appearance when viewed against the sky.
 - Short needle length
 - Needle color very poor, yellowish.
 - Dead or dying twigs or branches in the crown forming holes; sparse and ragged crown appearance.
 - Poor crown ratio.
 - Mistletoe infected.
- c. Trees affected by root rot, visual characteristics are:
- Groups of trees affected, with trees showing variable levels of decline.
 - Trees have reduced height growth; look at top of trees for reduced increment growth.
 - Yellow foliage; decline of the crown is from the top to the bottom.
 - Distress cone crop.
 - Bark beetles sometimes present because of the stressed trees.
 - Windthrow trees common; wood at the base of the downed trees is soft and stringy or has begun to delaminate.

2. Insect-infested trees

Douglas-fir and white fir trees undergoing attack from Douglas-fir bark beetle, as identified by red boring dust present in bark crevices or on the ground near the base of the tree. Foliage is thinning and yellowish in appearance. Borers typically begin their attack in the top of the tree, and then may spread to the lower bole. Pitch streamers may also be present on the mid- to upper bole.

Ponderosa pine trees undergoing current attack from western pine beetle or red turpentine beetle. Pitch tubes should contain reddish/brown granular frass. Pitch tubes clear in color indicate the tree has been successful in expelling the beetle; these trees should not be marked if otherwise healthy.

All snags and coarse woody debris would be maintained as they presently occur; snags that are a safety hazard may be felled but would be left on site.

Appendix F

Fisheries, Aquatics, and Riparian Reserves

Affected Environment

The proposed Flounce Around Timber Sale occurs in the Lost Creek 5th field watershed, which is also designated as the 6th field watershed. The BLM manages 12,930 acres within the 36,290 acre Lost Creek Watershed. Historically, the Rogue River ran through this watershed and fish migrated through the watershed to access streams upriver for spawning and rearing. In the late 1970s, the US Army Corps of Engineers (USACE) built the Lost Creek Dam on the Rogue River for flood control and recreational purposes. Lost Creek Reservoir, formed by the impounded water, is 10 miles long and covers 3,426 acres at full pool (USDI 1998). The dam completely blocks all migration of fish upstream and downstream on the Rogue River. Construction of the dam is the most significant factor affecting fish in this watershed.

All proposed timber harvest and road work occurs above Lost Creek Dam with the exception of 2 helicopter harvest units (33 acres of Density Management) and portions of two tractor harvest unit (60 acres of Density Management). The tractor units are at least ½ mile from any stream. The analysis areas for the aquatic and riparian resources include Lost Creek Reservoir, streams flowing into Lost Creek Reservoir that drain areas where timber harvest and road work would occur (part of the north and south side of the reservoir), the first mile of the Rogue River directly below the dam, and the lower 1.5 miles of Big Butte Creek. Streams that do not drain areas where timber harvest or road work would occur are not considered in the analysis area. Because no action would be occurring above them, there would be no change to the existing conditions.

A variety of resident and anadromous fish species occupy the proposed project area. Native fish species that utilize the Lost Creek Reservoir, the Middle Fork of the Rogue River, and tributary creeks to the reservoir include resident rainbow trout (*Oncorhynchus mykiss*), resident cutthroat trout (*O. clarki*), Klamath smallscale sucker (*Catostomus rimiculus*), and sculpin (*Cottus* spp.). Introduced species in the reservoir include brook trout (*Salvelinus fontinalis*), brown trout (*Salvelinus trutta*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), brown bullhead (*Ictalurus nebulosus*), bluegill (*Lepomis macrochirus*), and black crappie (*Pomoxis nigromaculatus*). Native fish species that utilize the upper Rogue River and lower Big Butte Creek include coho salmon (*O. kisutch*), chinook salmon (*O. tshawytscha*), summer and winter steelhead trout (*O. mykiss*), resident rainbow trout (*O. mykiss*), coastal cutthroat trout (*O. clarki*), Pacific lamprey (*Lampetra tridentata*), brook lamprey (*L. richardsoni*), speckled dace (*Rhinichthys osculus*), white sturgeon (*Acipenser transmontanus*), Klamath smallscale sucker (*C. rimiculus*), and sculpin (*Cottus* spp.) (USDI 1998).

Coho salmon are listed as a threatened species under the Endangered Species Act (ESA) of 1973. As directed under ESA, NOAA Fisheries designates Southern Oregon/Northern California (SO/NC) Coho Salmon Critical Habitat (CCH) and Essential Fish Habitat (EFH), defined as areas within the geographical area currently or historically occupied by the species that have the physical or biological features essential to the conservation of the species and requires special management and protection (NOAA Fisheries 2003). Within the project area, the Rogue River, up to the dam, and the lower section of Big Butte Creek are designated as CCH and EFH (NOAA Fisheries 2005).

Pacific Lamprey is a State of Oregon designated sensitive species and receives protection because available data suggests they have declined through many parts of their ranges. There is little known about their abundance and distribution in the Rogue River Basin (ODFW 2002). Pacific lamprey are known to use the Rogue River up to the Lost Creek Dam and the lower section of Big Butte Creek. Above the Lost Creek Dam, Pacific lamprey is believed to be extinct (ODFW 2002).

Historically, chinook, coho, and steelhead utilized the Rogue River and its tributaries several miles above the Lost Creek Dam. When the dam was constructed, this historic range was eliminated for these species. Resident cutthroat trout remained in the Rogue River above the dam and continue to use streams that flow into Lost Creek Reservoir. Streams within the analysis area used by cutthroat trout include Lost Creek (north), a small unnamed tributary, and Skookum Creek in T33S, R1E, Sections 1, 11, and 12 and in T33S, R2E, Sections 3 and 10. This represents 3.5 miles of resident trout habitat in the proposed project area; approximately 1.5 miles is located on BLM-administered lands. Sculpin distribution is currently unknown. Klamath smallscale suckers have been documented only in Lost

Creek Reservoir. Chinook, coho, and steelhead utilize the Rogue River and the lower section of Big Butte Creek within the project area.

The BLM conducted fish habitat surveys on Lost Creek (north) in 1981 and 1997 and on Skookum Creek in 1997. Surveys indicated that fish habitat is in fair to good condition based on quantities of gravel and cobble substrate, pool habitat, and riparian condition (see Table F-1) (USDI 1997). Large wood quantities in Skookum Creek were low and did not provide adequate channel structure to dissipate stream energy.

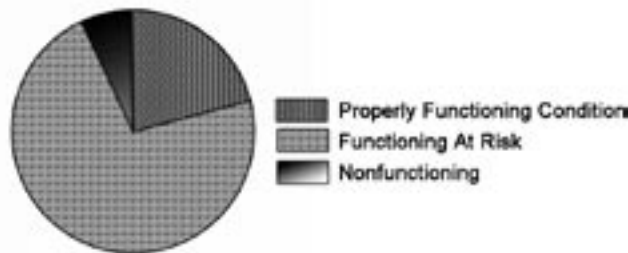
Stream	Pool Quality	Percentage of Gravel	Riparian Condition	Large Woody Material	Overall Condition
Lost Creek (north)	Fair	Good	Good	Good	Good
Skookum Creek	Fair	Good	Fair	Poor	Fair

SOURCE: BLM fish habitat surveys in 1981 (Lost Creek north) and 1997 (Lost Creek north and Skookum Creek)

Riparian areas within the Lost Creek Watershed are characterized by Douglas-fir, California black oak, ponderosa pine, and western-hemlock in the overstory. Grasses, poison oak, vine maple, and willows are the dominant understory type vegetation. Past timber harvest and road development has removed vegetation in 2,234 acres of riparian areas within the watershed. Riparian Reserve widths on BLM-administered lands would be 160 feet for non-fish-bearing streams and 320 feet for fish-bearing streams and the Lost Creek Reservoir, which is consistent with the Medford District RMP/ROD (p. 26).

Riparian surveys were completed on 17.3 miles of streams within the Lost Creek Watershed in 1997. Within the analysis area, 8.1 miles of streams were surveyed. Surveys indicated most riparian areas are functioning at risk (FAR) followed by properly functioning condition (PFC), and non-functioning (NON) (see Figure F-1). Poor vegetation conditions, the major cause of the FAR and NON conditions, resulted in inadequate long-term sources of large instream wood and vegetation to dissipate stream energy. About 65 percent of the streams had high sediment levels (greater than 12 percent fines) and lacked channel structure to dissipate stream energy and capture and retain sediment (USDI 2004). The lack of channel structure causes increased stream energy that can lead to active downcutting and increased streambed mobility (Faustini and Jones 2003). This has occurred on about 12 percent of the streams. Embeddedness greater than 35 percent was observed in 3.6 miles (45 percent) of the reaches surveyed. Most of these streams are not fish-bearing; however, the elevated sediment levels can reduce or eliminate habitat available for aquatic invertebrates (Meehan 1991).

Figure F-1. Riparian functioning condition ratings for the Lost Creek Watershed.



The major cause for the existing FAR and NON riparian vegetation conditions is past logging of riparian areas and road development. On BLM-administered land, 8,400 acres have been harvested since the 1940s; 2,234 acres were harvested in riparian areas. With the designation of Riparian Reserves, riparian areas are no longer managed for timber production. These areas are able to recover and eventually reach mature seral conditions. The riparian surveys indicated 5.3 miles (about 65 percent) have elevated fine sediment levels due to roads (USDI 2004). The road density for the Lost Creek 5th field watershed is 4.8 miles per square mile. Within Riparian Reserves, 9.2 miles are rock surfaced roads and 10.7 miles are natural surfaced roads. Several of these roads are not maintained and contribute sediment to streams. This results in poor habitat available for spawning and rearing for resident fish. Priority actions to restore streams within the watershed would be road decommissioning and active management of riparian areas to promote mature seral forest conditions.

No surveys have been completed since 1997, but it is believed habitat conditions have maintained or improved on surveyed reaches over the past 6 years. The Timbered Rock Fire burned 262 acres within the Lost Creek Watershed. The streams within the fire were first order streams (small headwater drainages) and there is very little chance the fire would contribute sediment to fish-bearing streams.

Environmental Consequences

Effects of Alternative 1 (No Action) on Fisheries, Aquatics, and Riparian Reserves

Direct and Indirect Effects

Alternative 1, the No Action Alternative, would have no direct effect on fish or fish habitat. With no on-the-ground actions, there would be no direct improvements or damage to fish and other members of the aquatic biotic community or to aquatic habitat.

Indirectly, the vegetation within the Riparian Reserve would continue to develop and provide the long-term (50-100+ years) elements necessary for healthy aquatic ecosystems, such as instream large wood, shade, and bank stability. Vegetation in nonrecovered openings within the TSZ would continue to develop. This would be expected to reduce the risk of increasing the magnitude and frequency of peak flow events.

Additionally, by delaying or foregoing road decommissioning, road renovation, and road maintenance, this alternative could indirectly cause sedimentation in streams like Lost Creek North and Skookum creeks. Road densities, which are fine sediment sources, would remain unacceptably high within the watershed. Problem culverts that contribute sediment into the stream system would continue to be chronic sources for fine sediment. The problems would be expected to have indirect, adverse effects for fisheries and aquatic resources through habitat degradation over the short- and long-term (more than five years or until the road had fully stabilized).

Cumulative Effects

On BLM-administered land, 8,400 acres have been harvested since the 1940s; 2,234 acres were harvested in riparian areas. With the designation of Riparian Reserves in 1994, riparian areas are no longer managed for timber production. These areas are able to recover and eventually reach mature seral conditions. Most private timber land has been cut in the past. This has contributed to the existing high sediment levels in streams and the lack of large wood in streams. It is expected harvest would occur in private industrial timber land to some extent in the foreseeable future. The added affects of past timber harvest and road development on BLM-administered lands and activities on private lands has resulted in the conditions occurring in streams as defined in detail under the Affected Environment.

Most of the private timber land has been cut in the past. Cumulatively, this has contributed to the existing high sediment levels and the lack of large wood in streams. It is expected harvest will occur in private timber land to some extent in the foreseeable future.

The added effects of past timber harvest and road development on BLM-administered lands to the effects from activities on private lands has resulted in the conditions occurring in streams, as defined in "Affected Environment."

The on-going fuel reductions on 1,927 acres would reduce the risk of stand-replacing fires that often burn through riparian areas, removing vegetation along streams and increasing sediment into streams. By reducing the fuel loads, Riparian Reserves would continue to develop with less risk of total consumption from a wildfire. This would benefit fish and other aquatic resources as Riparian Reserves develop and supply a long-term source of large wood for streams. With more large wood sources available as areas develop, more large wood would enter streams and provide channel structure to dissipate stream energy and trap sediment. Habitat for aquatic invertebrates would be improved, resulting in more food available for resident fish. This would result in a beneficial cumulative effect on fish and aquatic resources.

In this alternative, the amount of nonrecovered openings within the TSZ would diminish as trees mature on BLM-administered lands and the existing open areas recover. As a result, a slight reduction in the magnitude

and frequency of peak flow events should occur. Additionally, the hazard fuels reduction would reduce the risk of increased peak flows because the risk of a large wildfire would be reduced. Large wildfires can increase the magnitude and frequency of peak flows in the first few years following a fire because of reduced soil infiltration and reduced evapotranspiration from the loss of vegetation (Ice, et al. 2004).

Future BLM projects in the area include road maintenance and a culvert replacement project planned in the next couple of years. There are no planned BLM timber harvest projects in the foreseeable future within the watershed. The future road work includes replacing 4 culverts, blading and rocking 14 miles of roads, constructing 16 armored waterdips, and constructing 1 gate. This is expected to cause some short-term (1-2 years) localized sedimentation of streams but not to the extent of harming fish. In the long-term (more than 3 years), there would be less road-caused erosion and the new culvert would have less risk of failure. This would provide a net benefit for fish and aquatic habitat.

Foregoing road decommissioning, maintenance, or renovation opportunities could lead to an increase in stream sedimentation levels from surface erosion or mass failure of cuts and fills. This would be expected to have an adverse cumulative effect on fisheries and aquatic resources through potential cumulative increases in stream sediment levels. This is also dependent upon private activities and their use and maintenance of the transportation system in the watershed. Some roads may stabilize over time as they revegetate; however, this may take many decades to achieve. The adverse cumulative effects from the continued sedimentation of streams would affect the reservoir and the streams flowing into the reservoir. Maintaining high sediment levels in the few fish-bearing streams would negatively affect rearing and feeding behaviors of cutthroat trout and rainbow trout. The Lost Creek Dam would trap any sediment from moving below the dam and adversely affecting the Rogue River.

Determination of Effects on SO/NC Coho Salmon, SO/NC CCH, and EFH from Implementation of Alternative 1

No Effect

The No Action Alternative would have no positive or negative effect to SO/NC coho salmon, CCH, or EFH. With no ground-disturbing activity occurring, existing conditions would continue on the current trend. No physical changes would occur to negatively impact downstream conditions and coho habitat.

Effects of Alternative 2 on Fisheries, Aquatics, and Riparian Reserves

Direct and Indirect Effects

Under Alternative 2, Density Management harvest is proposed on 350 acres, SGFMA Regeneration harvest is proposed on 69 acres, NGFMA Regeneration harvest is proposed on 29 acres, and Selection Cut is proposed on 65 acres. Logging systems for these acres are tractor yarding on 379 acres, cable yarding on 31 acres, and helicopter yarding on 93 acres. No direct or indirect effects to fish and aquatic habitat are expected from the felling or yarding of trees. No harvest or yarding would occur in Riparian Reserves; therefore, no avenues would be created for sediment to enter streams.

Openings in the TSZ would increase by 50 acres and soil compaction from heavy equipment would increase; however, these actions are unlikely to change peak flows because most harvest units are designated for density management or selective cut treatments. These treatments would leave a residual canopy closure of 40-60 percent which would be expected to maintain the current hydrologic functioning condition of the upland areas. Because peak flows are unlikely to change as a result of proposed timber harvest, no changes or affects to aquatic habitat or fish are expected.

Log hauling would occur on approximately 25 miles of roads. Some localized sediment may enter streams above the reservoir when log trucks are hauling logs. The amount of sediment generated would likely be inconsequential because all roads would be rocked prior to hauling or hauling would only occur during dry conditions. This would reduce the risk of sediment entering streams. If a small amount of sediment were to enter streams from log hauling, it would be an inconsequential effect to fish.

Because no harvest would occur in Riparian Reserves, the vegetation would continue to develop and provide the long-term elements necessary for healthy aquatic ecosystems. In areas where the Riparian Reserve is currently in early to mid-seral conditions, mature seral characteristics would develop at a naturally slow rate.

The proposed 1.5 miles of road decommissioning would be restore the natural hydrologic flow paths and reduce the risk of erosion and subsequent stream sedimentation from these roads. Fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (less than one year). Because of the small amount of decommissioning proposed, the magnitude of negative short-term effects would be inconsequential. These increases would not be expected to persist beyond one year after completion of the proposed activities. Alternatively, road decommissioning would indirectly benefit fish within the watershed by reducing potential road-generated fine sediment; however, with such a small amount of decommissioning the net benefit to fish and streams would be inconsequential.

The proposed 25 miles of road renovation and 3 miles of road improvement would have short-term (less than 1 year), indirect, negative effects to fish and aquatic habitat from localized increases to baseline stream turbidity and sediment levels. These increases would not be expected to persist beyond one year after completion of the proposed activities. The amount of sediment would not extirpate the fish in these streams, but may modify behavior until sediment levels return to baseline levels (less than one year). Conversely, the proposed road maintenance and road renovation actions would indirectly benefit fish within the watershed by reducing the amount of erosion and sedimentation to streams from these roads in the long-term (more than five years).

The proposed construction of 17 temporary spur roads, totaling 3 miles, would occur on ridges and flat ground. Landings would be constructed at 10 locations for helicopter service and log landings. All spur roads and landings would be constructed outside Riparian Reserves so no delivery mechanisms would be created for sediment to enter streams.

The closure of four miles of roads to vehicle traffic would reduce the amount of vehicle-caused erosion, resulting in less risk of sediment entering streams and negatively affecting fish habitat.

One undersized culvert would be replaced with a 36" culvert on BLM road 32-2E-34. The culvert replacement would disturb stream banks and substrates in the immediate area resulting in up to 10 cubic yards of sediment entering the stream during installation (see also "Effects of Alternative 3 on Hydrology" in Appendix D). The work would be completed during the summer low flow period and exposed soil would be seeded and mulched, which would reduce the potential for sediment to enter the stream. The amount of sediment entering streams would not extirpate the fish in these streams, but may temporarily limit production. This would not affect the cutthroat trout populations as a whole because only local fish would be affected. Although these actions could result in short-term negative affects, they would result in a direct beneficial effect on the aquatic system in the long-term by restoring hydrologic connectivity and function. Replacement of undersized culverts would also indirectly benefit the aquatic system by reducing the risk of road failure during high flow events.

No effects to the long-term productivity of fisheries and aquatic resources are anticipated from the proposed timber harvest, road renovation, road decommissioning, and culvert replacement. Maintaining the current Riparian Reserve design and allowing vegetation to develop throughout the proposed project area would continue to provide the long-term elements necessary for healthy aquatic ecosystems. Maintaining 40-60 percent or greater canopy closure in proposed harvest units would provide an insignificant increase of openings within the TSZ. Timber harvest within the TSZ is very small within the proposed project area and would not affect the hydrologic regime of the area. The current productivity of fisheries and aquatic resources would be maintained or increased over the long-term. Peak flows would not change because of the small area within the TSZ that would be opened.

Short-term (1 -5 years) increases to baseline stream sediment levels would occur from road maintenance, road renovation, road decommissioning, and replacement of one culvert under the proposed timber sale. However, it is anticipated that an overall reduction in the risk to increasing baseline stream sediment levels would occur due to maintenance, renovation, and decommissioning of the road system. Subsequently, it is anticipated the current productivity of fisheries and aquatic resources in the watershed would be maintained or increased over the long-term.

Cumulative Effects

See "Cumulative Effects" under "Effects of Alternative 1 (No Action) on Fisheries, Aquatics, and Riparian Reserves" for past, present, and future BLM projects in the area.

This alternative would allow the vegetation within the Riparian Reserve to continue to develop and contribute a

long-term supply of large wood to the aquatic ecosystem. This would result in a beneficial cumulative effect to fish and aquatic resources due to increased habitat quality.

Timber harvest would likely occur in the foreseeable future on private timber lands and may increase openings in the TSZ, resulting in an increase in magnitude and frequency of peak flows. Any increase in peak flows would be inconsequential due to the small amount of TSZ present in the watershed (see peak flow discussion in Appendix D, Soil/Hydrology). The BLM proposed timber harvest would reduce vegetative cover and increase canopy openings in the TSZ by 50 acres. It is unlikely this would affect peak flows because only a small amount of timber harvest would occur in the TSZ. The removal of timber would have no cumulative effect on aquatic habitat relating to peak flows.

All log yarding activity on BLM-administered lands would occur outside of Riparian Reserves and no avenues for sediment to reach streams would be created. Because of this, the impacts from tractor, cable yarding, and helicopter operations would not have a cumulative effect to streams.

It is expected several roads on private lands would remain in poor condition, causing sediment to enter adjacent streams. Erosion from these roads contributes to the existing sediment conditions in streams surveyed in the project area. Sediment generated from the proposed road maintenance, road decommissioning, and culvert removal/replacement likely would cause a short-term (1-2 years) increase in erosion and sedimentation to nearby streams. After two years, the ground-disturbance associated with the timber harvest would be restabilized by vegetation and would no longer cause sedimentation to streams. Road improvements and decommissioning would reduce the amount of erosion from the roads and the amount of sedimentation to streams. A net reduction of stream sedimentation associated with roads would result from the proposed actions. Aquatic habitat conditions would improve with the reduction of sediment; however, the net benefit would be small and the overall high sediment conditions would remain because only a small fraction of all problem roads would be repaired or decommissioned. The Lost Creek Dam would prevent any effects from the proposed project from moving down the Rogue River.

Replacement of one undersized culvert could directly impact the aquatic system by disturbing stream banks, vegetation, and substrate. Although this action could result in short-term increases in turbidity and sedimentation, it would result in a long-term beneficial effect on the aquatic system by restoring hydrologic connectivity and function. Replacement of an undersized culvert would also indirectly benefit the aquatic system by reducing the risk of road failure during high flow events. The net cumulative affect of culvert replacement would benefit aquatic resources.

Determination of Effects on SO/NC Coho Salmon, SO/NC CCH, and EFH from Implementation of Alternative 2.

May Effect, Not Likely to Adversely Effect

Some sediment may enter a stream below the proposed landing in Section 27 and be transported to the Rogue River below the dam. However, by following the appropriate PDFs, these effects would be minimized and are not expected to result in “take” of listed fish species. Alternative 2 is considered “not likely to adversely effect” SO/NC coho salmon (listed “threatened”) or SO/NC Critical Habitat. Informal consultation with NOAA Fisheries was initiated in January 1998 for SO/NC coho salmon and SO/NC CCCH. A Letter of Concurrence was received from NOAA Fisheries in April 1998.

EFH was not included in this consultation because this project went through ESA consultation before it was a requirement and the project was determined to “not likely to adversely effect” EFH. The activities above the dam would have no affect to EFH. Below the dam, all timber harvest, yarding, post-harvest slash treatment, and all road work, except the landing and associated road work in Section 27, would have no affect to EFH because no delivery mechanisms would be created for sediment to reach the Rogue River or Big Butte Creek. The log landing and road work in Section 27 may cause localized sediment to enter the Rogue River. The amount of sediment mobilized would be inconsequential and, if deposited into the Rogue River, would not adversely affect EFH.

Effects of Alternative 3 on Fisheries, Aquatics, and Riparian Reserves

Direct and Indirect Effects

Under Alternative 3, Density Management harvest is proposed on 300 acres, SGFMA Regeneration harvest is proposed on 6 acres, and Selective cut is proposed on 47 acres. Logging systems would include tractor yarding on

239 acres, cable yarding on 4 acres, skyline yarding on 23 acres, and helicopter yarding on 87 acres. No direct or indirect effects to fish and aquatic habitat are expected from the felling or yarding of trees off these acres. No harvest or yarding would occur in Riparian Reserves, so there would be no avenues for sediment to reach streams.

There would be an increase in openings within the TSZ of 12 acres and increased soil compaction by heavy equipment; however, these actions are unlikely to change peak flows. Most harvest units designated for density management or selective cut treatment would leave a residual canopy closure of 40-60 percent. Only six acres of SGFMA Regeneration harvest would occur under this alternative. This would be expected to maintain the current hydrologic functioning condition of the upland areas. It is unlikely this would result in any change to aquatic habitat or fish.

Log hauling would occur on approximately 28 miles of roads. Some localized sediment may enter streams above the reservoir when log trucks are hauling logs. The amount of sediment generated from log hauling would likely be inconsequential because all roads would be rocked prior to hauling or hauling would only occur during dry conditions. This would reduce the risk of sediment entering streams. If a small amount of sediment were to enter streams from log hauling, it would have an inconsequential effect on fish.

The vegetation within the Riparian Reserves would continue to develop and provide the long-term elements necessary for healthy aquatic ecosystems. In areas where the Riparian Reserve is currently in early to mid-seral conditions, it would be expected that mature seral characteristics would develop at a naturally slow rate.

The proposed 12 miles of road renovation would be expected to have short-term (less than 1 year), indirect, negative effects to fish and aquatic habitat from localized increases to baseline stream turbidity and sediment levels. These increases would not be expected to persist beyond one year after completion of the proposed activities. Conversely, the proposed road maintenance and road renovation actions would be expected to provide long-term (more than 5 years), indirect benefits to fish within the watershed by reducing the risk of sedimentation to streams from these roads.

The proposed construction of 10 temporary spur roads, totaling 2.1 miles, would be located on ridges and flat ground. Nine landings would be constructed for helicopter service and log landings. All spur roads and landings would be constructed outside of Riparian Reserves and no avenues for sediment to enter streams would be created.

The closure of four miles of road to vehicle traffic would reduce the amount of vehicle-caused erosion, resulting in less risk of sediment entering streams and negatively affecting fish habitat.

Replacement of one undersized culvert could directly impact the aquatic system by disturbing stream banks, vegetation, and substrate. Although this action could result in short-term increases in turbidity and sedimentation, it would result in a long-term beneficial effect on the aquatic system by restoring hydrologic connectivity and function. Replacement of an undersized culvert would also indirectly benefit the aquatic system by reducing the risk of road failure during high flow events. The net cumulative affect of culvert replacement would benefit aquatic resources.

Cumulative Effects

See “Cumulative Effects” section under “Effects of Alternative 1 (No Action) on Fisheries, Aquatics, and Riparian Reserves” for past, present, and future BLM projects in the area.

Cumulative effects in Alternative 3 would be the same as under Alternative 2 except the net cumulative benefits would be less from the reduced road work. Under Alternative 3, there would be very little road work completed, resulting in an inconsequential reduction of road-related erosion. A majority of the road problems on BLM-administered lands would continue to contribute sediment to streams. The existing high sediment levels (see Affected Environment) would remain in most streams, resulting in an inconsequential beneficial cumulative effect to the road-related sediment.

**Determination of Effects on SO/NC Coho Salmon,
SO/NC CCH, and EFH from Implementation of Alternative 3.
May Effect, Not Likely To Adversely Effect**

The effects of this alternative would be identical to those identified in Alternative 2 because the treatments occurring below the dam that may impact SO/NC coho are the same.

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Appendix G

Post Harvest Fuels Treatments

Fuels assessment would be conducted within each unit following harvest activity. This assessment would determine the fuels hazard and fire risk based on aspect, slope, surface fuels loading (tons per acre), access, and location of each unit. Treatment recommendations would be based on post-harvest fuels assessment of the amount of slash created during harvest activities. To determine tons per acre, the *Photo Series for Quantifying Forest Residues* in the Douglas-fir-stand types will be used (Maxwell and Ward 1976).

Post-harvest slash treatments would consist of lop and scatter, excavator piling, hand piling, and burning of the piles created. During the post-harvest assessments, if the tons per acre are low (less than 30 tons), the possible recommended treatment would be to lop and scatter. If the tons per acre are moderate to high (greater than 31 tons), the recommended treatment would be to pile the unit.

The following photos and data sheets show residue loading levels generated from silviculture treatments and the loading levels, in tons per acre, which can be expected. This information is used to determine the post-harvest slash treatment method.

Lop and Scatter



DATA SHEET

Residue descriptive code 2-DF-4-PC

LOADING			OTHER MEASUREMENTS	
Size class (inches)	Weight (tons/acre)	Volume (ft ³ /acre)		
0.25-1.0	1.9	124	Average residue depth	(feet) <u>0.5</u>
1.1-3.0	3.6	289	Ground area covered by residue 1/4-inch diameter and larger	(percent) <u>76</u>
3.1-9.0	6.3	483	Average duff and litter depth	(inches) <u>1.4</u>
9.1-20.0	8.1	547	Sound residue 3.1-inch diameter and larger	<u>Douglas-fir</u> (percent) <u>54</u>
20.1+	0	0		<u>western hemlock</u> (percent) <u>21</u>
Total	19.9	1,443		<u>other</u> (percent) <u>21</u>
			Rotted residue 3.1-inch diameter and larger	(percent) <u>4</u>

HARVEST INFORMATION		PRECOMMERCIAL THINNING INFORMATION		FUEL RATING
Gross volume cruised (M fbm/acre)	<u>26</u>	Stems cut/acre	_____	U.S. Forest Service Region 6 fuel type identification <u>HH</u>
Net volume cruised (M fbm/acre)	<u>21</u>	Stems remaining/acre	_____	
Average stems/acre cut	<u>52</u>	Basal area/acre before	_____	REMARKS
Average d.b.h. of stems cut (inches)	<u>22</u>	Basal area/acre after	_____	
Stand age (years)	<u>170+</u>	Average d.b.h. before (inches)	_____	
Cutting prescription	<u>Tree selection</u>	Average d.b.h. after (inches)	_____	
Yarding method	<u>Tractor</u>	Thinning method	_____	
Slash treatment	<u>None</u>	Slash treatment	_____	
Period since cut or treatment (months)	<u><5</u>			

Thin, Pile, and Burn



DATA SHEET

Residue descriptive code 7-DF-4-PC

LOADING			OTHER MEASUREMENTS	
Size class (inches)	Weight (tons/acre)	Volume (ft ³ /acre)		
0.25-1.0	3.6	240	Average residue depth (feet)	<u>0.7</u>
1.1-3.0	9.5	759	Ground area covered by residue 1/4-inch diameter and larger (percent)	<u>95</u>
3.1-9.0	14.6	1,128	Average duff and litter depth (inches)	<u>5.2</u>
9.1-20.0	2.5	192	Sound residue 3.1-inch diameter and larger	
20.1+	31.6	2,463	Douglas-fir (percent)	<u>56</u>
Total	61.8	4,782	western redcedar (percent)	<u>35</u>
			other (percent)	<u>3</u>
			Rotted residue 3.1-inch diameter and larger (percent)	<u>6</u>

HARVEST INFORMATION		PRECOMMERCIAL THINNING INFORMATION		FUEL RATING
Gross volume cruised (M fbm/acre)	<u>44</u>	Stems cut/acre	_____	U.S. Forest Service Region 6 fuel type identification <u>HE</u>
Net volume cruised (M fbm/acre)	<u>28</u>	Stems remaining/acre	_____	
Average stems/acre cut	<u>15</u>	Basal area/acre before	_____	REMARKS
Average d.b.h. of stems cut (inches)	<u>38</u>	Basal area/acre after	_____	
Stand age (years)	<u>250</u>	Average d.b.h. before (inches)	_____	
Cutting prescription <u>Overstory removal</u>		Average d.b.h. after (inches)	_____	
Yarding method <u>Tractor</u>		Thinning method _____		
Slash treatment <u>None</u>		Slash treatment _____		
Period since cut or treatment (months)	<u>8</u>			

Pile and Burn



DATA SHEET

Residue descriptive code 6-DFHD-4-CC

LOADING			OTHER MEASUREMENTS	
Size class (inches)	Weight (tons/acre)	Volume (ft ³ /acre)		
0.25-1.0	5.6	371	Average residue depth (feet)	<u>2.1</u>
1.1-3.0	10.4	833	Ground area covered by residue 1/4-inch diameter and larger (percent)	<u>97</u>
3.1-9.0	51.6	2,647	Average duff and litter depth (inches)	<u>0</u>
9.1-20.0	13.8	793	Sound residue 3.1-inch diameter and larger tan oak (percent)	<u>75</u>
20.1+	0	0	Douglas-fir (percent)	<u>12</u>
Total	81.4	4,844	other (percent)	<u>11</u>
			Rotted residue 3.1-inch diameter and larger (percent)	<u>2</u>

HARVEST INFORMATION	PRECOMMERCIAL THINNING INFORMATION	FUEL RATING
Gross volume cruised (M fbm/acre) <u>43.5</u>	Stems cut/acre _____	U.S. Forest Service Region 6 fuel type identification <u>EE</u>
Net volume cruised (M fbm/acre) <u>38.2</u>	Stems remaining/acre _____	REMARKS
Average stems/acre cut <u>34</u>	Basal area/acre before _____	
Average d.b.h. of stems cut (inches) <u>34</u>	Basal area/acre after _____	Down and dead hardwoods comprise much of the residue in this photo series level. The understory hardwood stand prior to logging, using rating criteria where:
Stand age (years) <u>200</u>	Average d.b.h. before (inches) _____	1 = <5 ft in height
Cutting prescription <u>Clearcut</u>	Average d.b.h. after (inches) _____	2 = 5-15 ft in height
Yarding method <u>Slackline</u>	Thinning method _____	3 = >15 ft in height and
Slash treatment <u>None</u>	Slash treatment _____	A = 0-33% understory crown space occupied
Period since cut or treatment (months) <u>12</u>		B = 34-66% " " " "
		C = 67-100% " " " "
		was rated by District Foresters as <u>3C</u>

Appendix H

Unit Summary Table

Table H-1. Harvest Methods and Logging Systems by Unit for all Action Alternatives					
Legal Description	Operational Inventory Unit and Key Number	Alternative 2 Harvest Method (Acres)	Alternative 3 Harvest Method (Acres)	Logging System (Acres)	
T33S, R1E, Sec. 1	003 - 0	NGFMA-CON 17		Tractor 14 Cable 3	
T33S, R1E, Sec. 1	004 - 163009	SC 4		Tractor	
T33S, R1E, Sec. 1	004 - 163009	DM 10		Helicopter	
T33S, R2E, Sec. 3	003 - 160847	DM 36	DM 37	Tractor 23 Cable 14	
T33S, R2E, Sec. 4	002 - 0	SGFMA 13	SC 13	Tractor	
T33S, R2E, Sec. 5	003 - 160858	DM 14		Tractor	
T33S, R2E, Sec. 8	005 - 162477	DM 22	DM 22	Helicopter 16 Tractor 6	
T33S, R2E, Sec. 9	002 - 160873	DM 19	DM 20	Tractor 11 Helicopter 9	
T33S, R1E, Sec. 11	001 - 160720	SC 6		Cable	
T33S, R1E, Sec. 11	008 - 160720	SC 17		Tractor	
T33S, R1E, Sec. 11	010 - 163027	DM 5		Cable	
T33S, R2E, Sec. 17	001 - 160893	DM 14	DM 24	Helicopter	
T33S, R2E, Sec. 19	003 - 160895	DM 36	DM 28	Tractor	
T33S, R1E, Sec. 23	779 - 160786	DM 36	DM 41	Tractor 28 Cable 13	
T33S, R1E, Sec. 23	005 - 160789	DM 13	DM 20	Tractor	
T33S, R1E, Sec. 27	003 - 160795	DM 34	DM 27	Helicopter	
T33S, R2E, Sec. 31	007 - 163050	SC 11	SC 13	Tractor	
T32S, R2E, Sec. 32	002 - 160409	DM 5		Tractor	
T32S, R2E, Sec. 33	003 - 160409	SGFMA 56		Tractor	
T32S, R2E, Sec. 33	003 - 160409	SC 13		Tractor	
T33S, R1E, Sec. 35	005 - 160840	SC 14	SC 21	Helicopter	
T33S, R1E, Sec. 35	006 - 160841	DM 19	DM 6	Helicopter	
T33S, R1E, Sec. 35	007 - 160842	DM 68	DM 60	Tractor	
T33S, R1E, Sec. 35	008 - 0	NGFMA 6	DM 6	Tractor	
T33S, R1E, Sec. 35	012N-161296	NGFMA 6	NGFMA 6	Tractor	
T33S, R1E, Sec. 35	012S-161296	DM 9	DM 9	Tractor	

DM (Density Management) Stands are thinned or partially harvested to maintain or enhance forest health, stand structure and function for wildlife purposes or for purposes other than growth and yield. Marking is focused toward the smaller diameter classes.

SC (Selective Cut) Areas are marked on an individual tree basis to a prescription. Generally, stand diameter classes are larger with a higher amount of risk trees in all diameter classes. Individual trees are removed based upon crown ratio, form, and vigor.

Flounce Around Timber Sale EA

SGFMA (Southern General Forest Management Area - Structural Retention Regeneration Harvest) Final harvest that consists of treatments in which trees and downed woody debris remain to meet the NWFP ROD Standards and Guidelines of 16 to 25 trees per acre greater than 20" DBH.

NGFMA (Northern General Forest Management Area - Modified Even-Aged Regeneration Harvest) Final harvest that consists of treatments in which trees and downed woody debris remain to meet the NWFP ROD Standards and Guidelines of 6 to 8 trees per acre greater than 20" DBH.

NGFMA CON (Northern General Forest Management Connectivity Regeneration Harvest) Final harvest that consists of treatments in which trees and downed woody debris remain to meet the NWFP ROD Standards and Guidelines of 12 to 18 trees per acre greater than 20" DBH.

Totals

Alternative 2

Harvest Method (503 acres):

DM (340 acres), SC (65 acres), SGFMA (69 acres), NGFMA (12 acres), NGFMA CON (17 acres)

Logging System (503 acres):

Helicopter (93 acres), Tractor (379 acres), Cable (31 acres)

Alternative 3

Harvest Method (353 acres):

DM (300 acres), SC (47 acres), NGFMA (6 acres)

Logging System (353 acres):

Helicopter (87 acres), Tractor (239 acres), Cable (27 acres)

Appendix I

Visual Resources



Lost Creek Reservoir

Affected Environment

The public lands administered by BLM contain many outstanding scenic landscapes. Any activities that occur on these lands, such as recreation, mining, timber harvesting, grazing, or road development, have the potential to disturb the surface of the landscape and impact scenic values. Visual resource management (VRM) is a system for minimizing the visual impacts of surface-disturbing activities and maintaining scenic values for the future.

“BLM’s VRM system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings” (USDI 2005).

The Flounce Around Timber Sale is situated on the south, west and north shores of Lost Creek Reservoir on lands administered by the Bureau of Land Management, Butte Falls Resource Area, Medford District.



Visual Resource Management Classes

The Flounce Around project area was identified in the Medford District BLM Resource Management Plan (RMP) as VRM Classes II and III. Please refer to the RMP for the Visual Resource Management Classes map (USDI 1995, Map 10).

Visual Resource Management Class Objectives

Class II

The objective of VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

VRM Class II was allocated in the RMP to the following locations within the project area (USDI 1995, 70):

- The viewshed from Lost Creek Reservoir.
- Within the foreground/middleground of Highway 62 from Shady Cove to Lost Creek Reservoir.

Class III

The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

VRM Class III was allocated in the RMP to matrix lands in the project area managed as southern general forest management areas (USDI 1995, 70). Class III lands are those lands in the project area not in the views identified as Class II.

VRM Class Criteria

Criteria used to determine VRM classes are scenery quality ratings, public sensitivity ratings, and distance zone-seen area mapping criteria (USDI 1994, 3-70).

Scenic Quality

“Scenic quality is a measure of the visual appeal of a tract of land.” “. . . public lands are given an A, B, or C rating based on the apparent scenic quality which is determined using seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications” (USDI 1986, 2).

Scenic quality in the project area is classified as Class A, high quality natural scenery, at Lost Creek Reservoir and scattered rock bluffs along the north shore, and Class B, natural scenery common to the Oregon Cascade Mountain Character Type.

Sensitivity Levels

“Sensitivity levels are a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels by analyzing the various indicators of public concern” (USDI 1986, 3). Some factors to consider are the types of users, the amount of use, public interest, adjacent land uses, and special areas.

Sensitivity levels of concern for scenery are high, with many recreationists using the lake for boating, fishing, swimming, camping, hiking, bicycling, and enjoying the outdoor environment. Additionally, the Rogue-Umpqua Scenic Byway (State Highway 62) traverses the project area in an east-west orientation, affording views to the lake and its scenic backdrop. Highway 62 connects the Rogue Valley to Crater Lake National Park, so it is an important travel route for viewing landscape scenery.

Distance Zones

“Landscapes are subdivided into 3 distance zones based on relative visibility from travel routes or observation points. The 3 zones are: foreground-middleground, background, seldom seen” (USDI 1986, 4).



Distance zones of visibility for the Flounce Around project area are foreground-middleground, plus some areas that are seldom seen. BLM Manual Handbook 8410-1 describes foreground-middleground as “areas seen from highways, rivers, or other viewing locations which are less than 3 to 5 miles away” (USDI 1986, 4). Because Highway 62 and Lost Creek Reservoir are situated in the Rogue River watershed, surrounded by steep mountainous terrain, most of the project area is located within the foreground-middleground distance zone. Seldom seen areas are “areas not seen as foreground-middleground or background (i.e., hidden from view)” (USDI 1986, 4).

Seen and seldom seen areas were mapped on US Geologic Survey topographic maps, based on field analysis and analysis of the digital elevation model (DEM) utilizing MICRODEM (a microcomputer mapping program) software. Because the mountainous terrain includes numerous streams, canyons, benches, and minor draws, there are many occurrences of seldom seen areas (see Map I-1).

Visual Assessment

Landform/Waterform

The serpentine Rogue River has carved a circuitous, twisting route through the steep mountainous terrain enclosing the Flounce Around project area. Construction of Lost Creek Reservoir by the US Army Corps of Engineers has created a large water body with horizontal line contrasting with the steep mountains. Landform slopes range from less than 5 percent on the south shore to bluffs with slopes greater than 150 percent at Flounce Rock.



Vegetation

Vegetation around Lost Creek Reservoir has a great deal of visual variety, with thick stands of dark green mixed conifer trees (Douglas fir, ponderosa pine, sugar pine, incense cedar), medium green hardwood trees (black and white oak, madrone, ash, and numerous brushfields of poison oak and gray-green wedge leaf Ceanothus). Large, grassy flats occur on the south shore, near the marina and campground, and on the north shore on US Army Corps of Engineers-administered lands. Woody vegetation has a wide variety of ages and sizes, creating a mosaic of patterns and textures that drape over the steep mountains.

On private lands within the viewshed, logging has created new openings in the forest canopy with unnatural skyline edges. Most of the BLM-administered lands are covered by dense vegetation, trees and shrubs, and forest fuels that have built up to unnatural levels. Fire has been excluded from project lands for several decades, which has changed the visual resources of the vegetation within the project area. Historic photos show vegetation was more widely scattered, giving an open feeling to the forest. The growth of trees and shrubs has limited visibility through the forest, creating a jungle-like appearance of brush, tree trunks, branches and forest litter on the ground.



Rockform

Rocks in the project area are dramatic, with dark gray vertical bluffs in scattered locations along the north shore, plus the large expanse of dark gray bluffs on the west side of Flounce Rock.



Environmental Consequences

Effects of All Action Alternatives on Visual Resources

Rockform

No change would occur because the major rockforms are located outside proposed timber harvest units.

Waterform

No change would occur because Lost Creek Reservoir and the Rogue River are located outside proposed timber harvest units.

Landform

One landform change would occur at a proposed helicopter landing adjacent to Highway 62 northeast of OI-006-160841. Westbound traffic would have a long duration view into this proposed landing because there is little to no vegetative screening. However, since the landing would be constructed on Oregon Department of Transportation right-of-way, VRM guidelines do not apply. See Table I-1 and the visual contrast rating forms for details.

Vegetation

Under any action alternative, vegetation would be modified, removed, or both. In general, the modification of trees, shrubs, and other woody debris would not be evident to the casual observer in the long-term. In most cases, within one year there would be sufficient green-up of remaining vegetation so no visual contrast would remain. Short-term visual contrasts would occur, with color and texture changes that would remain for one to three years. Only in rare occurrences would color or texture contrasts remain for two or three years. Increased amounts of wildflowers and grasses would add seasonal color in spring and summer.

Reference: <http://www.blm.gov/nstc/VRM/vrmsys.html>

Table I-1. VRM Analysis for Timber Harvest Units

Location	Operational Inventory Unit and Key Number	VRM Class Objective	Seen or Seldom Seen Area	Meets VRM Class Objective	Comments
T33S, R1E, Sec. 1	003-0	II	Seen	Yes	
T33S, R1E, Sec. 1	004-163009	II	Seen and Seldom Seen	Yes	
T33S, R1E, Sec. 1	004-163009	II	Seen and Seldom Seen	Yes	
T33S, R1E, Sec. 11	001-160720	II	Seen	Yes	
T33S, R1E, Sec. 11	008-160720	II	Seen	Yes	
T33S, R1E, Sec. 11	010-160720	II	Seen	Yes	
T33S, R1E, Sec. 23	005-160789	II	Seen	Yes	2.
T33S, R1E, Sec. 23	009-160534	II	Seen	Yes	
T33S, R1E, Sec. 23	779-160786	II	Seen	Yes	
T33S, R1E, Sec. 27	003-160795	II	Seen	Yes	
T33S, R1E, Sec. 35	005-160840	II	Seen	Yes	
T33S, R1E, Sec. 35	006-160841	II	Seen	Yes	
T33S, R1E, Sec. 35	007-160842	II	Seen	Yes	
T33S, R1E, Sec. 35	008-162472	II	Seen	Yes	
T33S, R1E, Sec. 35	012N-161296	II	Seen	Yes	
T33S, R1E, Sec. 35	012S-161296	II	Seen	Yes	
T33S, R2E, Sec. 3	003-160847	II	Seen	Yes	1.
T33S, R2E, Sec. 4	002-160850	II	Seen	Yes	1.
T33S, R2E, Sec. 5	003-160858	III	Seldom Seen	Yes	
T33S, R2E, Sec. 8	005-162477	II	Seen	Yes	
T33S, R2E, Sec. 9	002-160873	II	Seen	Yes	
T33S, R2E, Sec. 17	001-160893	II	Seen	Yes	
T33S, R2E, Sec. 19	003-160895	II	Seen	Yes	
T33S, R2E, Sec. 31	007-163050	II	Seen	Yes	
T33S, R2E, Sec. 32	002-160409	III	Seen	Yes	1.
T33S, R2E, Sec. 33	003-160409	III	Seen	Yes	1.
T33S, R2E, Sec. 33	003-160409	II	Seen	Yes	1.

Comments:

1. Visible from Highway 62 (westbound) but not visible from Lost Creek Reservoir, access roads, or recreation sites.
2. Visual rehabilitation is recommended to reduce or eliminate the existing unnatural edge effect of vegetative clearing caused by existing powerline right-of-way. Feathering and scalloping of vegetation edges is recommended for this project.

Form 1404
September 1983

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 5.30.03
District Medford
Resource Area Butte Falls
Activity (program) Timber

SECTION A. PROJECT INFORMATION

1. Project Name Flounce Around
2. Key Observation Point Lost Creek Res. Hwy 62 + Recreation Sites
3. VRM Class II + III
4. Location
Township 33S/02E
Range E/2E
Section _____
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	steep mountains Large reservoir is flat	Mosaic of dense conifer grassy meadow and scattered brushfields	scattered recreation buildings + residences
LINE	angular skyline horizontal waterline	vertical tree boles angular brush	vertical walls + angular roofs
COLOR	dark gray rock outcrop blue gray water	dark green conifers gray green brushfields	tan, gray, brown
TEXTURE	smooth textured landforms + water	coarse textured forest / smooth grasslands	smooth textures

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change	skyline wall + R.O.W. walls will be rehabilitated	No change
LINE	No change	unnatural lines will be eliminated	No change
COLOR	No change	less gray green brush and more dark green	No change
TEXTURE	No change	slightly more coarse textured forest	No change

SECTION D. CONTRAST RATING SHORT TERM LONG TERM

ELEMENT	DEGREE OF CONTRAST	FEATURES										2. Does project design meet visual resource management objectives? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side)	3. Additional mitigating measures recommended? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side) <u>See VRM report</u>	Evaluator's Name	Date		
		LAND/WATER BODY (I)				VEGETATION (C)				STRUCTURES (M)							
		Strong	Medium	Weak	None	Strong	Medium	Weak	None	Strong	Medium					Weak	None
Form																	
Line																	
Color																	
Texture																	

Evaluator's Name Lee Anderson Date 5.30.03
LEE ANDERSON

SECTION D (Continued)

Comments from item 2

Additional Mitigating Measure (See Item 5)

Feathering + scalloping of timber harvest unit boundaries is recommended. This would visually rehabilitate existing unnatural edge effects at existing powerline ROWs and along private lands that have been harvested.

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Appendix J

Economic Analysis

Economic Comparisons

Calculations for the economic comparisons were based on the following:

- Board feet estimates based on stand exam data.
- Return to Federal Treasury based on following attachments.
- Direct employment figures based on the Northwest Forest Plan FSEIS Table 3&4-49.
- Direct income figures based on Oregon Employment Department average weighted wage rates for lumber and wood products.

Alternative 1 (No Action)

Since no harvesting would occur under this alternative, no return would occur to the Federal Treasury and no forestry-related jobs would be created.

Alternative 2 - Regeneration Harvest and Canopy Retention

Under this alternative, approximately 3.9 million board feet would be harvested, with a return to the Federal Treasury of \$560,000. Direct employment would be 37 jobs resulting in direct income of approximately \$ 1.2 million dollars.

Alternative 3 - Canopy Retention and No Harvest in CHU

Under Alternative 3, approximately 2.2 million board feet would be harvested, with a return to the Federal Treasury of \$310,000. Direct employment would be 21 jobs resulting in direct income of approximately \$682,000 dollars.

Appendix K

Land Use Allocations found within the Flounce Around Project Area

The following land use allocations are found on BLM-administered lands within the Flounce Around Timber Sale project area. No treatments are proposed on these lands.

Area of Critical Environmental Concern

In 1995, the Medford District RMP designated the 10-acre Baker Cypress ACEC. The objective of this ACEC is to “maintain, protect, or restore relevant and important values” which are “Baker cypress stand, historic, cultural, scenic, educational, and wildlife values.” This area is not available for timber harvest, off-highway vehicle use is restricted to existing roads, and mineral leasing is subject to no surface occupancy (USDI 1995, 56 and 59).

Environmental Education Area

The 495-acre Flounce Rock Environmental Education Area was designated in the Medford District RMP. Environmental Education Areas “(p)rovide and maintain environmental education opportunities” (USDI 1995, 56). The primary objectives for the Flounce Rock Environmental Education Area are to minimize disturbance to historic, cultural, scenic, educational, and wildlife values. This area is not available for timber harvest, off-highway vehicle use is restricted to existing roads, and mineral leasing is subject to no surface occupancy (USDI 1995, 58).

Late-Successional Reserve

Three known (as of January 1, 1994) spotted owl activity centers are located in the project area. On these lands, 100 acres of the best northern spotted owl habitat were retained as close to the nest site or owl activity center as possible. In these known spotted owl activity centers, timber management activities must comply with management guidelines for Late-Successional Reserves (USDA and USDI 1994, C-10).

