SOUTH UMPQUA CONNECTIVITY DENSITY MANAGEMENT

Bureau of Land Management
South River Field Office
Roseburg District

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U.S. Department of the Interior, Bureau of Land Management
Roseburg District Office
777 NW Garden Valley Blvd.
Roseburg, Oregon 97470

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Chapter 1
Purpose and Need

This chapter provides a brief description of the purpose and need for the proposed action being analyzed in this environmental assessment.

Background

The areas proposed for treatment comprise approximately 144 acres located in Section 17, T. 30 S., R. 2 W. and Section 17, T. 30 S., R. 3 W. The stands are located on lands allocated as Connectivity/Diversity Blocks, and consist of dense, even-aged stands of Douglas-fir, 35-50 years old with minor components of hardwoods and other conifer species. These lands are located in the John Days Coffee Watershed Analysis Unit (WAU) within the South Umpqua River Analytical Watershed, and the Deadman/Dompier WAU within the Upper South Umpqua River/Dumont Creek Analytical Watershed. The John Days Coffee (p. 32) and Deadman/Dompier (p. 43) watershed analyses recommend commercial thinning treatments for forest stands 30-70 years of age.

The *Roseburg District Record of Decision and Resource Management Plan* (ROD/RMP June 1995) identified the development and maintenance of "a variety of structures, trees of varying age and size, with an assortment of canopy configurations" over time, as "Stand and Landscape Condition Objectives" for the management of Connectivity/Diversity Blocks (ROD/RMP p. 152).

The Objectives, Habitat Criteria, and Management Practices for Connectivity/Diversity Blocks (ROD/RMP, pp. 151-152) and Riparian Reserves (pp.153-154) have been used as guidance and direction for development of this project.

Purpose

Connectivity/Diversity Blocks were designated in the ROD/RMP (p. 33) for the purpose of providing habitat connectivity for old-growth dependent and associated species within the Matrix land use allocations. The purpose of the proposed density management would be the maintenance of stand vigor and accelerated growth of the remaining trees, in order to hasten the development of late-successional forest characteristics and enhance habitat conditions and biological diversity.

The proposed treatments would mimic a natural disturbance to help promote attainment of the "Target Stand Conditions" identified in the ROD/RMP (p. 152). Treatment of acres outside of Riparian Reserves would contribute an estimated 1.2 million board feet (MMBF) of timber, or approximately 2,040 hundred cubic feet (CCF), toward the annual allowable sale quantity objectives of the South River Field Office.

This environmental assessment serves to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI). It will consider the environmental consequences of the proposed action and no action alternatives, in the short and long term, on a site-specific project level and at the fifth-field analytical watershed level.

Need

There is a need to treat the stands identified in this analysis, in order to meet the objectives for stand and landscape conditions. One of the management objectives for Connectivity/Diversity Blocks is the development of a tree species composition over time of approximately "78 percent Douglas-fir, four percent pines, two percent Grand fir, 12 percent other conifers, and four percent hardwood." (ROD/RMP, p. 152) Without treatments, the current hardwood component in the stands would be overtopped and die out as a consequence of suppression by the Douglas-fir, which would be inconsistent with the objective of maintaining and developing a diverse tree species composition.

There is a need to reduce present stand densities. Without density management and in the absence of natural disturbances, the present stands would continue to develop as closed canopy single-storied stands. This would not allow sufficient light to penetrate the canopy and provide an opportunity for establishment of other conifer species in the understory, and subsequent development of additional canopy layers, which would be inconsistent with the objective of development of a variety of structures that include ". . . trees of varying age and size, and stands with an assortment of canopy configurations." (ROD/RMP, p. 152)

Implementation of the proposed action would conform to standards and guidelines contained in the ROD/RMP as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (p. 3). The ROD/RMP incorporates the analysis contained in the *Roseburg District Proposed Resource Management Plan/Environmental Impact Statement* (PRMP/EIS). The ROD/RMP and PRMP/EIS incorporate the standards and guidelines of the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (FSEIS. February 1994) and the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (ROD April 1994), also known as the Northwest Forest Plan.

Chapter 2
DISCUSSION OF THE ALTERNATIVES

This chapter describes the basic features of the alternatives being analyzed in this environmental assessment.

I. Alternative 1 - Proposed Action

Historically, fire was the primary disturbance responsible for the development of old-growth forests and the habitat conditions to which many species of wildlife are uniquely adapted. Following settlement, land use patterns changed and fires were suppressed to protect homes, farms, and other property values. Present-day concern for private property values, air quality, the unpredictability of fire behavior, and the relative inability to control prescribed fires on a large landscape-scale limits the application of fire as a management tool. Mechanical treatment is the most effective tool available to manipulate vegetation for the development and enhancement of old-growth forest conditions and habitat for the northern spotted owl and associated species.

This analysis proposes the treatment of two units (Appendix A). Treatments would be designed to reduce stand densities and overall competition among the remaining trees. This reduction in competition would encourage accelerated growth rates resulting in a more rapid development of late-successional habitat characteristics that would include large trees, multilayer canopies, understory development, snags, and large down wood.

The largest, most vigorous, and most well-formed trees would be favored for retention. Hardwoods selected for retention would be released by the removal of surrounding conifers. In Unit A, hardwoods greater than 10 inches in diameter would be selected for retention, while hardwoods greater than 8 inches in diameter would be selected in Unit J. Preference would also be given to minor conifer species in order to maintain them as components of the present stands and maintain future species diversity within the stands. Marking prescriptions would apply both variable and broad spacing. Variable spacing is based upon the release of trees specifically targeted for retention, such as hardwoods and minor conifer species. Broad spacing would involve wider spacing of trees to be retained, in order to obtain a canopy closure of 50 percent or less, in order to provide sufficient light to allow for the establishment and survival of an understory shrub community and intermediate canopy layers.

The majority of trees removed by the treatments would be in the range of 6-16 inches in diameter, but could include cutting of trees up to 24 inches in diameter. This could occur because of the nature of the variable spacing prescription, where preference for retaining selected hardwoods and minor conifer species could result in the removal of some larger trees, primarily Douglas-fir. An average of 70 trees per acre would be retained in Unit A. The southern portion of Unit J would be thinned to approximately 50 trees per acre, while the northern portion would be thinned to a density of 80-90 trees per acre. All remnant snags would be retained where they would not present a direct and immediate safety risk to forest workers. Unthinned areas would be left around snags to lessen safety

concerns and increase the likelihood of snag survival. All residual old-growth trees would be retained in the marking prescription, and all Class 3, 4 and 5 down wood would be reserved under contract provisions.

Treatments are proposed within Riparian Reserves. Stream structure and the integrity of banks and channels would be protected with a variable width buffer which would be a minimum of 20 feet in width and would conform to vegetative and topographic features adjacent to the streams. No felling or yarding would be allowed within or through the variable width buffer. Areas outside of these buffers but within Riparian Reserve limits would include unthinned areas interspersed with areas of uniform thinning from below. Tree densities within Riparian Reserves would be reduced to approximately 70 trees per acre in Unit A and 50 trees per acre in Unit J. Full canopy closure would be retained adjacent to streams and treatments would maintain a minimum average of 50 percent canopy closure within the remainder of the Riparian Reserves.

Two separate treatments would be applied to Unit A, as follows:

1) The area uphill and south of the mid-slope segment of Road No. 30-3-17.0 would be thinned to both variable and broad spacings, removing trees from the suppressed and intermediate classes while retaining approximately 70 dominant and co-dominant trees per acre.

2) Riparian Reserves would be thinned from below by applying a broad spacing that would retain approximately 70 trees per acre. This reduction in stem density and canopy closure would allow sufficient sunlight to reach the forest floor for the establishment of shrub communities in the understory, and development of successive canopy layers

Untreated areas would include the variable stream buffers and a flat area south of the mid-slope segment of Road No. 30-3-17.0 identified by the soil scientist, hydrologist, and fish biologist.

Three separate treatments would be applied to Unit J, as follows:

1) Road No. 30-2-20.1 divides the unit in two primary aspects. The area south of this road would be treated with both variable and broad spacings, removing trees from the suppressed and intermediate canopy classes while retaining approximately 50 dominant and co-dominant trees per acre.

2) The area north of the road would be thinned from below, removing trees in the suppressed and intermediate classes, while retaining 80-90 dominant and co-dominant trees per acre.

3) Riparian Reserves would be thinned from below based on a spacing that would retain approximately 50 trees per acre, for the reasons described above.

Untreated areas would consist of the variable width stream buffers, some alder patches on the east aspects of the unit, and an area along the proposed northern boundary of the unit.

Cable yarding would be the principal method for the removal of cut material. Specific contract provisions should include: spacing yarding corridors a minimum of 200 feet apart wherever practical in order to minimize the number of additional trees that would need to be cut to clear yarding corridors; requiring one-end suspension of logs during yarding; directional felling of trees away from property lines and adjacent reserves; and felling of all unreserved stems greater than 4 inches in diameter.

Approximately 6 acres on the ridge top and south of the ridge on Unit A and 2-3 acres of Unit J could be yarded using ground-based equipment. Ground-based yarding would be restricted to slopes of less than 35 percent. Existing skid trails would be used wherever practical. Where existing trails would not provide sufficient access, the number of equipment passes over any individual area would be limited.

No ground-based or cable yarding operations would be allowed prior to July 15, in order to avoid damaging residual trees during the bark slip period. The bark slip period is that time of year when active cambial growth can result in the bark being loosely attached and subject to mechanical damage. All road construction, road renovation, timber hauling and road decommissioning activities would be seasonally restricted to the period between May 15 and October 15.

Operational access for Unit A would be provided by renovation of the first 0.54 miles of Road No. 30-3-17.0, construction of a temporary spur 0.04 miles in length, and renovation of an existing natural surface spur approximately 0.11 miles in length. Both spurs, totaling 0.15 miles in length, would be decommissioned in the same operating season in which they are constructed/renovated and used.

Primary access for Unit J would be provided by approximately 1.46 miles of natural surface roads used in previous stand entries. Approximately 1.05 miles of these roads are located within the proposed unit boundaries. Construction of a new temporary spur road approximately 0.14 miles in length would also be necessary. After the completion of density management approximately 1.69 miles of roads would be decommissioned, including the temporary road and the renovated roads within the unit boundaries. The roads would be decommissioned in the same operating season in which they are renovated/constructed and used. The 30-2-20.1 road is a natural surface road. As part of the proposed action, 0.65 miles of this road would be surfaced with aggregate. Upon completion of density management treatments, the road would be blocked to traffic at the end of the surfaced segment.

Portions of the two units totaling an estimated 27 acres would be hand-piled and burned for site preparation. Specific site preparation needs for fuels reduction or facilitation of natural regeneration would be determined following the completion of density management. Prescribed burning would be carried out in a manner that would: minimize fire intensity; limit consumption of forest litter and large woody material; minimize damage to residual live trees and snags; and limit impacts to air quality.

II. Alternative 2 - No Action

Under a no action alternative, there would be no reduction in current stand densities. Growth and maturation would continue along present developmental trajectories in the absence of natural disturbances, resulting in single story, closed-canopy, Douglas-fir dominated stands. Hardwoods and minor conifer species would eventually be lost as stand components through the process of suppression mortality. There would be no manipulation of current stand structure and characteristics in upland stands and Riparian Reserves that would aid in the creation of large snags, large trees, large woody debris, understory growth and multilayered canopies. As a consequence, there would be no accelerated development of habitat conditions deemed beneficial to late-successional and old-growth dependent species. There would be no prescribed fire application for site preparation and hazard reduction.

None of the proposed road renovation or road decommissioning opportunities identified in this analysis would be undertaken at this time. These activities would require separate analyses and accomplishment under separate authorizations.

III. Elements of the Human Environment That Would Remain Unaffected

The following resources would not be affected by either of the alternatives, because they are absent from the project areas: Areas of Critical Environmental Concern (ACEC); prime or unique farmlands; floodplains; and Wild and Scenic Rivers. No Native American religious concerns, environmental justice issues, cultural resources, or solid or hazardous waste concerns were identified. No effect on the introduction or rate of spread of noxious weeds is expected, and is discussed in text.

IV. Alternatives Considered but Eliminated From Detailed Study

The proposal was initially conceived as a combined density management and commercial thinning analysis for 11 candidate units.

Three of the proposed units (A, B and J) are located in Connectivity/Diversity Blocks and were identified for density management under separate funding for forest and ecosystem health and restoration. The remaining units were dropped from consideration because an intermediate entry at this time was deemed premature, or because they were combined with a subsequent commercial thinning analysis for lands allocated to General Forest Management Areas.

Unit B and a portion of Unit A were dropped from further analysis after field review determined that the stands were not sufficiently developed for an intermediate treatment. These areas were pre-commercially treated by girdling under a service contract. Portions of Unit J were dropped because they are dominated by hardwoods and have a conifer density that is on a trajectory for development of desired stand characteristics.

A. No Removal of Material

In Riparian Reserves, retention on-site of all timber designated for cutting was considered as an alternative to the removal of merchantable timber. Trees marked for removal would be girdled and left standing, or would be felled and left on site. Girdled trees would provide a small-diameter snag component in the short term before falling over and contributing coarse woody material.

Trees killed by felling or girdling could provide prime brood habitat for bark beetles. Subsequent generations of beetles could then move into live trees, attacking and killing them. An increased risk of bark beetle infestation and stand damage has been identified at a point where more than three trees per acre greater than 12 inches in diameter are killed in a single year (Goheen 1996). On-site retention of all the material that would require cutting to achieve desired stand densities would pose an unacceptable risk of insect infestation and mortality in the remaining stands.

If girdled or felled trees cut for the variable spacing treatment were left on the forest floor, fuel loading would be increased by as much as 15 tons/acre. This would represent an unacceptable increase in the risk of fire and potential loss of the stands, which would be inconsistent with management objectives for the Riparian Reserves. Approximately 10 tons/acre of this material would be less than 3 inches in diameter, the size of material which represents ignition potential and influences the rate of spread in the event of an ignition. The remaining 5 tons/acre would be material greater than 3 inches in diameter. This size of material is primarily responsible for the intensity and duration of a fire. Fine fuels would represent a short-term increase in the risk of ignition, lasting one to three years after the treatment. The increased potential for high intensity, longer duration fires represented by the larger fuels would persist for 15 to 20 years.

B. Staggered Cutting

Another alternative would be to stagger the cutting of trees in order to achieve the desired stand densities. A portion of the trees would be felled or girdled each year until the desired stand density was achieved. The potential of bark beetles infestation would be reduced if three or fewer trees per acre in the12-to-20 inch diameter range were cut each year.

For illustrative purposes, Organon growth modeling (Hann 1999) indicates that for Unit A, more than 40 trees per acre in the 12-20 inch diameter classes would require removal to meet the desired stand density and stand condition objectives. Staggered cutting would require a minimum of 15 years to achieve desired densities, based on felling a maximum of three trees per year greater than 12 inches in diameter. This would meet objectives for overstory development, but relative stand density would remain fairly constant. Stand density is a measure of site occupancy based on tree size and numbers of trees per acre. For any given average stand diameter, there is a maximum number of trees per acre that can exist on the site, or in another perspective, for a given number of trees per acre there is a maximum size that those trees can reach. This value varies by species and has been given the term maximum stand

density index. Relative density compares current density of a stand with the maximum. Relative density indicates whether the stand is growing well, is in need of thinning, could support an understory, or is experiencing mortality suppression. Canopy closure would remain high and would not allow sufficient light levels for establishment and development of an understory and multilayered canopy.

Chapter 3
AFFECTED ENVIRONMENT

This chapter summarizes the specific resources that are present or have the potential to be present within the area and could be affected by the proposed action.

I. Forest Stand Characteristics

The stands proposed for treatment are located within the Southern Grand Fir Zone. Douglas-fir is the dominant species in most older stands within this zone. Grand fir is a frequent co-dominant on northerly aspects and on flat terrain. Incense-cedar is present, especially on drougthy soils or recently disturbed sites. Western hemlock occurs occasionally on northerly aspects and moist sites. Western redcedar is a frequent conifer associate in moist areas and Riparian Reserves. Sugar pine may also occur, primarily on drier southerly aspects.

Several species of hardwoods are present in association with the conifers. Bigleaf maple and golden chinkapin occur regularly on north aspects, while Pacific madrone is more common on southerly aspects with California black oak as an occasional associate. Red alder is less common except in very moist areas and is not a major stand component on well-drained upland areas.

Understory growth occurs primarily on northerly aspects, where salal is the predominant shrub species. Other shrub species include Oregon-grape, western hazel, creambush ocean spray, whipplevine, red huckleberry, western prince's pine, yerba buena and hairy honeysuckle. Grasses and western poison-oak are the primary understory species on the drier, southerly aspects.

Proposed Unit A is an even-aged 55-year-old stand of Douglas-fir having an average stand diameter of 12 inches. The unit is located between 1,450 feet and 2,400 feet in elevation and is predominantly north-facing with a small portion of the unit located atop and to the south of a ridge. Evidence of past snow-break is present in tree tops throughout the stand. The unit was pre-commercially thinned in 1967 and fertilized in 1985. Hardwoods currently account for only 3 percent of the total stand basal area. Suppression mortality of hardwoods and conifers is on the increase throughout the entire stand.

Proposed Unit J is an even-aged 34-year-old Douglas-fir stand having an average diameter of about 11 inches. The unit is located between 2,500 feet and 3,150 feet in elevation and is divided by a road into predominantly east and north aspects. Hardwoods currently account for approximately 4 percent of the total stand basal area. With the exception of a few alder thickets, hardwoods are being overtopped and eliminated by suppression.

Table 1 summarizes the current conditions of the stands proposed for treatment. These figures were generated from stand exam data using Organon growth modeling software.

Table 1 - Current Stand Conditions

	Unit A	Unit J
Total Age	55	34
Trees per acre - Conifer	201.9	297.8
Trees per acre - Hardwood	4.5	23.4
Basal Area - Conifer	178.3 sq.ft	210.6 sq. ft.
Basal Area - Hardwood	5.3 sq. ft.	9.6 sq. ft.
Volume/Acre - Scribner MBF	28.9	25.5
Quadratic Mean Diameter	12.8"	11.2
Organon Relative Density	0.58	0.73
Average Crown Ratio	.34	.44
Approximate Crown Closure	78%	93%

This data is average stand data that includes areas with smaller diameter trees.

Figure 1 was generated by the Stand Visualization System as a representation of the present stand structure and condition of the portions of Unit A to be commercially treated.

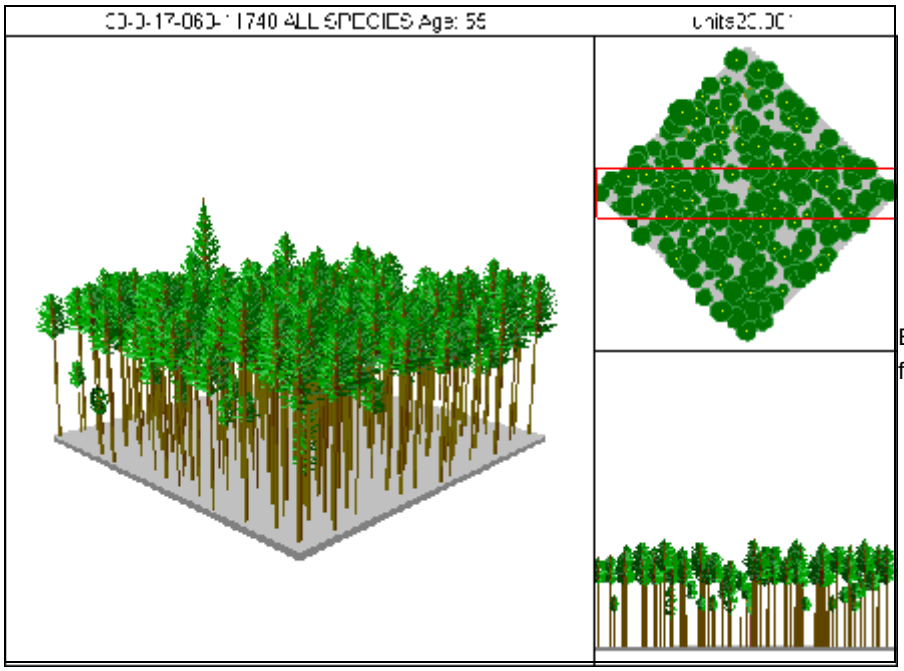


Figure 1
Existing condition for unit A.

Figure 2 was generated by the Stand Visualization System as a representation of the present stand structure and condition of Unit J.

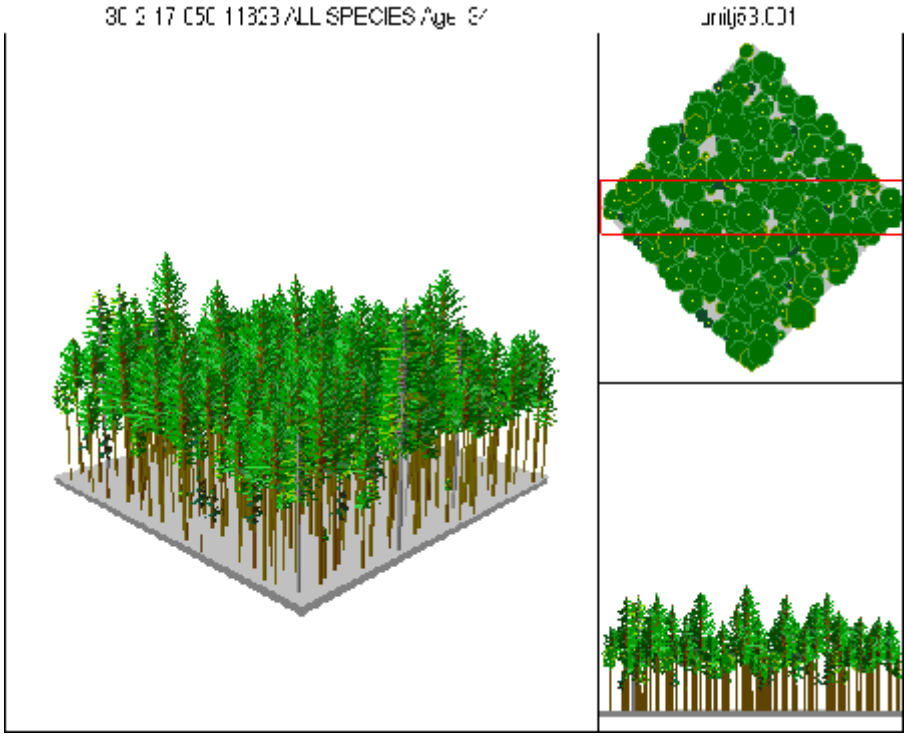


Figure 2
Existing condition for unit J

Table 2 is a representation of the current 2-inch diameter class distribution for hardwoods and conifers in the stands proposed for commercial treatments.

Table 2 - Trees Per Acre by Diameter Class

Diameter Class In Inches	Unit A			Unit J		
	All Species	Conifer	Hardwoods	All Species	Conifers	Hardwoods
0-2	0.0	0.0	0.0	0.0	0.0	0.0
2-4	15.2	15.2	0.0	0.0	0.0	0.0
4-6	11.1	11.1	0.0	15.9	15.9	0.0
6-8	3.7	3.7	0.0	76.8	60.9	15.9
8-10	18.8	18.8	0.0	58.1	51.7	6.5
10-12	48.7	46.9	1.8	80.7	80.7	0.0
12-14	39.7	38.2	1.4	35.9	35.9	0.0
14-16	41.7	40.7	1.1	25.7	25.7	0.0
16-18	15.9	15.9	0.0	15.9	15.9	0.0
18-20	9.0	9.0	0.0	6.2	6.2	0.0
20-22	2.2	2.2	0.0	5.0	5.0	0.0
22-24	0.0	0.0	0.0	1.1		1.1
24-26	0.0	0.0	0.0			
26-28	0.0	0.0	0.0			
28-30	0.0	0.0	0.0			
30-32	0.0	0.0	0.0			
32-34	0.0	0.0	0.0			
34-36	0.0	0.0	0.0			
36-38	0.2	0.2	0.0			
38-40	0.0		0.0			
40-42	0.0		0.0			
42-44	0.0		0.0			
44-46	0.0		0.0			
46-48	0.0		0.0			
48-50	0.0		0.0			
50-52	0.1		0.1			
>52						
Total	206.3	201.9	4.5	321.2	297.8	23.4

II. Special Status, Special Attention, and Riparian Associated Species

Special Status Species are those species that are: listed as threatened or endangered under the Endangered Species Act of 1973 (as amended), are candidates or are proposed for listing under the Endangered Species Act, are designated as Bureau Sensitive, or Bureau Assessment. Bureau Sensitive species are eligible for federal or state listing or candidate status as designated under BLM 6840 policy. Under Oregon/Washington BLM 6840 policy, Bureau Assessment species are not presently eligible for listing or candidate status under the Endangered Species Act, but are species of State concern which may require protection or mitigation in the application of BLM management activities.

SEIS Special Attention species are those species designated for protection under Survey and Manage and/or Protection Buffer standards and guidelines in the ROD for the Northwest Forest Plan and the Roseburg District ROD/RMP, as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl.* These species are not considered special status species unless concurrently listed under a special status category.

Riparian associated species are those species which are associated with late-successional and old-growth forest habitat and which are dependent on wetlands and riparian areas for major portions of their life-cycles. These species include arthropods, mollusks, bryophytes, vascular plants, and amphibians.

A. Terrestrial Wildlife

1. Threatened and Endangered

The following species inhabit lands managed by the Roseburg District: the Federally-endangered Columbian White-tailed deer, the Federally-threatened marbled murrelet, the Federally-threatened northern spotted owl, and the Federally-threatened bald eagle.

Suitable habitat for the bald eagle (*Haliaeetus leucocephalus*) is not present within the project areas. The project area is located outside of the management zone for the marbled murrelet (*Brachyramphus marmoratum*). As a consequence, these species are not expected in the project area, no impacts would be anticipated, and no further discussion is necessary in this analysis.

The project area does not contain suitable habitat and is located outside of the range of the Columbian White-tailed deer (*Odocoileus virginianus leucurus*). The U.S. Fish and Wildlife Service has proposed that the Douglas County population be delisted. Final action on the proposed delisting is expected in the spring of 2001.

The Federally-threatened Canada lynx (*Lynx canadensis*), Federally-endangered Fender's blue butterfly (*Icaricia icarioides fenderi*) and the Federally-threatened vernal pool fairy shrimp (*Branchinecta lynchi*) have not been documented on the Roseburg District. These species are not expected to be present for the following reasons, so no consequences would be anticipated and no further discussion is warranted in this analysis.

The Canada lynx typically inhabits higher elevation forest at or above 5,000 feet, and preys predominantly on snowshoe hare. Oregon is on the southern edge of the historic range of the species. The project area is at elevations primarily below 3,000 feet, and the presence of snowshoe hare has not been noted. Habitat for the vernal pool fairy shrimp is absent in the project area. Larvae of Fender's blue butterfly feed exclusively on Kincaid's lupine. In a visit in 1990, Paul Hammond of Oregon State University concluded that populations of Kincaid's lupine on the Roseburg District were insufficient in size and too widely scattered to support viable populations of the butterfly. Subsequent botanical surveys have not identified additional populations of Kincaid's lupine considered sufficient to alter this conclusion.

The Federally-threatened northern spotted owl (*Strix occidentalis caurina*) is present in proximity to the proposed project area. The portion of the proposal located in Section 17 of T. 30 S., R. 2 W. is overlapped by the 1.3 mile radius median home ranges (Klamath Province) of four owl pairs identified as the Granite Creek, Rondeau Butte, Ruby Ridge and Salt Creek sites. That portion of the proposal located in Section 17 of T. 30 S., R. 3 W. is overlapped by the 1.3 mile radius median home range of a single owl pair in the Ash creek drainage. There is no designated critical habitat within the project areas. Suitable habitat on BLM-managed lands is less than 30 percent within the median home ranges of all five owl pairs.

Owl habitat within the project areas is presently classed as "potential habitat 3." Stands of this nature are suitable for foraging and dispersal, but lack components such as large trees that would make them suitable for nesting and winter cover.

2. Federal Proposed or Candidate

There are no terrestrial species which are proposed for listing, or are candidates for listing, under the Endangered Species Act which have been documented in the proposed project areas or which are expected to inhabit them.

3. Bureau Sensitive

The portion of the project area in Section 17 of T. 30 S., R. 3 W. is within 25 miles of known populations of Del Norte salamanders (*Plethodon elongatus*). This species has been designated in the amended Standards and Guidelines for Survey and Manage (pp. 49-50) as one for which pre-disturbance surveys are no longer necessary in order to meet management objectives. As a consequence it will receive no further discussion in this analysis.

The Oregon Megomphix snail (*Megomphix hemphilli*) favors hardwood litter and forest canopy, has been identified throughout the South River Resource Area, and may inhabit the project areas.

4. Bureau Assessment

The only species considered to have the potential of inhabiting the proposed project areas is the merlin (*Falco columbarius*), though its presence would likely be migratory in nature. This species prefers mature forest stands adjacent to open areas for hunting. These habitat features are absent in the stands proposed for treatment, so the species is not expected to be present, no effects would be anticipated, and no further discussion of the merlin is necessary in this analysis.

5. SEIS Special Attention Species

The red tree vole (*Arborimus longicaudus*) is an arboreal rodent that primarily inhabits the canopy of Douglas-fir trees, where it nests and feeds, though it has been known to feed on needles of western hemlock, Sitka spruce and true firs. Although the red tree vole is more strongly associated with late-seral and old-growth forest, it has been documented in younger stands of the type proposed for treatment.

Habitat used by the great gray owl (*Strix nebulosa*) is characterized by older forest stands, which are absent from the project area. In the absence of habitat, the species is not expected to be present or affected, and will not be discussed further.

B. Fish

In Section 17, T. 30 S., R. 3 W., fish are present in two streams in the general project area. These streams are Bailey Gulch, which is tributary to Days Creek, and Lavadour Creek, a frontal stream of the South Umpqua River. In Section 17, T. 31 S., R. 2 W., fish are present in Ruby Creek which is tributary to Coffee Creek, and Salt Creek, a frontal stream of the South Umpqua River. The limits of fish presence are documented at approximately 0.5 to 1 mile downstream of the proposed units.

Aquatic habitat inventories have been conducted by the Oregon Department of Fish and Wildlife on Coffee Creek, Days Creek, and Lavadour Creek. Inventories have not been conducted on Salt Creek, Ruby Creek or Bailey Gulch. The overall aquatic habitat ratings for Coffee Creek and Days Creek were described as “Poor.” Aquatic habitat conditions for Lavadour Creek were described as “Fair.” The "Poor" rating by the Oregon Department of Fish and Wildlife equates to a "Not Properly Functioning" determination and “Fair” to an “At Risk” determination in the National Marine Fisheries Services MPI (USDC 1996).

The National Marine Fisheries Service's Matrix of Pathways and Indicators (MPI) was used to describe the current conditions of the aquatic environments that could be affected by the proposed action. Environmental baseline conditions for the proposed South Umpqua Connectivity Density Management project in the Coffee Creek, Days Creek, Dompier Creek, and St. Johns Creek Subwatersheds are contained in Appendix B.

Watershed-level habitat elements in the environmental baseline that are described as "at risk" and/or"not properly functioning" include large woody debris, physical barriers to migration of aquatic organisms, pool frequency, pool quality and, off-channel habitat and refugia.

1. Federally Threatened and Endangered

The Umpqua River cutthroat trout (*Oncorhynchus clarki clarki*) had been previously listed by the National Marine Fisheries Service as an endangered species. On April 5, 1999, the National Marine Fisheries Service proposed the delisting of the species based on a determination that the species is not an Evolutionary Significant Unit. In a Federal Register notice on April 19, 2000 (Federal Register, Vol. 65, No. 76/ Wednesday, April 19, 2000/ Rules and Regulations, pp. 20915-18), the National Marine Fisheries Service formally announced the delisting. The U.S. Fish and Wildlife Service concurred in a Federal Register Notice on April 26, 2000. The delisting of the species also removed critical habitat designation. Because the Umpqua cutthroat trout is no longer considered an endangered species, there will be no further discussion of the species in this analysis.

The National Marine Fisheries Service has also listed the Oregon Coast coho salmon (*Oncorhynchus kisutch*) Evolutionary Significant Unit. It was designated as a threatened species (Federal Register, Vol. 63, No. 153/Monday, August 10, 1998/Rules and Regulations) and critical habitat has been designated. The species is present in both of the fifth-field watersheds in which the proposed action is located, though not in the immediate vicinity of either of the proposed density management units.

2. Federal Proposed or Candidate

The Oregon Coast steelhead (*Oncorhynchus mykiss*) was proposed for listing by the National Marine Fisheries Service as a threatened species under the Endangered Species Act (Federal Register, Vol. 63, No. 53/Thursday, March 19, 1998/Rules and Regulations) and is present in both of the fifth-field watersheds in which the proposed action is located, though not in the immediate vicinity of either of the proposed density management units.

3. Bureau Sensitive

The Pacific lamprey (*Lampetra tridentata)* and Umpqua chub (*Oregonichthys kalawatseti*) are on the United States Fish and Wildlife Service list of Species of Concern and are considered Bureau Sensitive by the BLM (Manual 6840). The Pacific lamprey and the

Umpqua chub have been documented by the Oregon Department of Fish and Wildlife in the South Umpqua Watershed in the main stem of the South Umpqua River, but do not reside in the project areas. The proposed actions would have no direct effect on habitat for these species, no direct effects on their populations are anticipated, and as a consequence they will not be discussed further in this analysis.

C. Plants

1. Federally Threatened or Endangered

Kincaid's lupine (*Lupinus sulphureus var. kincaidii*) is the only Federally-threatened vascular plant identified as a potential occupant of the project areas, based on the condition of currently available habitat.

2. Bureau Sensitive

The wayside aster (*Aster vialis*), clustered lady's slipper (*Cypripedium fasciculatum*), and tall bugbane (*Cimicifuga elata*) have all been identified as potential occupants of the project areas, based on the condition of currently available habitat.

3. Bureau Assessment

California sword fern (*Polystichum californicum*) is the only Bureau Assessment species identified as a potential occupant of the project areas, based on habitat conditions.

4. SEIS Special Attention Species

The following vascular and non-vascular plants are suspected to occur within the project areas based on the available habitat.

Bryophytes
Buxbaumia viridis
Diplophyllum plicatum
Kurzia makinoana
Marsupella emarginata aquatica
Schistostega pennata
Tetraphis geniculata
Tritomaria exsectiformis

Lichens
Hypogymnia duplicata
Lobaria linita
Pseudocyphellaria rainierensis

Fungi
Aleuria rhenana
Bondarzewia montana
Otidea leporina
Otidea onotica
Otidea smithii
Polyozellus multiplex

D. Riparian Associated Species

Several species of terrestrial mollusks may occur in the project areas in association with Riparian Reserves, including *Ancotrema sportella*, *Haplotrema vancouverense*, *Prophysaon andersoni*, *Vertigo columbiana*, and *Ariolimax columbianus*. At least one species of aquatic snail (*Juga juga*) and four species of salamanders (Dunn's, Pacific giant, clouded, and the rough-skinned newt) may be present.

III. Water Resources

The proposed density management units are located within four different drainages in four subwatersheds, and within two fifth-field watersheds in the South Umpqua River Basin. Portions of the units are located in the transient snow zone. The South Umpqua Basin has been identified by the Oregon Department of Environmental Quality (ODEQ) as water quality limited (Water Quality Limited Streams - 303(d) List). The South Umpqua River, where it flows through the project area, has been identified as water quality limited for flow modification, pH, sediment, and temperature. Flow modification is a consequence of agricultural diversion for irrigation, and elevated pH is primarily the consequence of run off from agricultural lands. These two criteria would remain unchanged by the proposed actions. Days Creek is listed as water quality limited based on habitat modification.

Watershed analyses, surveys by the Oregon Department of Fish and Wildlife, and personal observations by BLM fisheries specialists were used to describe conditions for the drainages in which the proposed density management would occur. They characterize general watershed conditions in the National Marine Fisheries Service MPIs (Appendix B) as "not properly functioning" based on the condition of Riparian Reserves, disturbance history, and the density and locations of roads. Hydrology and flow conditions for drainage network and peak/base flows are generally described as "at risk" to "not properly functioning." Channel conditions and dynamics, and water quality vary greatly across the three drainages.

On the Roseburg District the transient snow zone exists in an elevational range between 2,000 and 5,000 feet above sea level. Approximately 134 of the 144 acres proposed for density management are located within the transient snow zone. Timber harvest and road construction has been identified as potential contributors to peak flows resulting from warm rain on snow events. The acres within each of the affected drainages that are located in the transient snow zone are displayed in Table 3. The table also identifies the current levels of hydrologic recovery, as calculated using the Hydrologic Recovery Process model. The Hydrological Recovery Process was developed by the Umpqua National Forest for use in the Southern Oregon Cascades, and is applied across all land ownerships within the subject drainages. Table 4 illustrates current watershed conditions relative to drainage, ownership, stream network and the transportation system. The data combines information from watershed analyses and the Roseburg District Geographic Information System database.

Table 3 - Acres within the Transient Snow Zone and Percent Hydrologic Recovery

Drainage	Total Acres	Total Acres in TSZ	HRP (% recovered)
Green Gulch	3399	339	99.4
Lavadoure	1078	282	96.2
Lower Coffee	3135	1347	93.5
Salt Creek	1380	918	92.9

Table 4 - Summary Table of Current Watershed Conditions

Drainage	Land Area in sq. miles	Road Density mi./sq. mile	Miles of Roads	Stream Density mi./sq. mile	Miles of Streams	Stream Crossing Density crossings/ stream mi.	Number of Stream Crossings	Percent BLM Ownership
Green Gulch	5.31	4.45	23.64	6.45	34.27	2.28	78	14.8
Lavadoure Creek	1.68	4.14	6.95	6.49	10.91	2.20	24	62.4
Lower Coffee	4.90	3.74	18.34	6.54	32.03	2.19	70	42.9
Salt Creek	2.16	5.02	10.85	5.11	11.03	2.36	26	33.5

IV. Soils

Soils in Unit A originated from weakly-structured, slightly brittle or metamorphosed siltstone, 40 inches to greater than 60 inches deep. They are generally well drained on planar and convex slopes, but tend to be poorly drained on concave slopes and in swales. Subsoils are clay loams and clays, with clay content of 27-to-45 percent. Gravel-sized rock fragments constitute 5-to-25 percent of the soil. Topography on the steeper convex and planar slopes is hummocky, representative of past slope instability. Trees within these areas do not show signs indicative of any recent slope movement, however. Concave slopes exhibit sag pond development with slump bench topography. Soils within this unit have a moderate potential for bare surface erosion because of their high silt content. A scarp face and sag ponds were located in the northwest quadrant of the proposed unit, above the mid-slope road, in association with a riparian area.

Soils in Unit J originated from micaceous sandstone and siltstone, and are generally 40 inches in depth and greater. Soils are well drained on planar and convex sideslopes and moderately well drained to poorly drained on concave slopes and in swales. Subsoils are clay loams to clays with clay content ranging from 27-to-45 percent. Gravel-sized rock fragments constitute 5-to-25 percent of the soil. Previous ground-based harvest entries have compacted approximately 3 percent of the unit area.

Soils in both units are classified as Category 2, for sensitivity to the use of prescribed fire.

V. Cultural Resources

No known prehistoric or historic sites are located in the immediate vicinity of the proposed units. Four prehistoric sites have been previously documented within one mile of Unit J in Section 17, T.30 S., R.2 W., but not within the proposed unit. Three of the sites are located in the uplands on gentle slopes, while the remaining site is situated on an alluvial bench along Coffee Creek.

No sites have been documented in the vicinity of Unit A in Section 17, T. 30 S., R. 3 W. In the absence of cultural resources, no consequences are anticipated, and no further discussion is necessary in this analysis.

VI. Noxious Weeds

Noxious weeds are spreading throughout the Roseburg District. Exact figures on the extent of infestations are not available, but the BLM Oregon State Office reported that the acreage of infestation increased at the average rate of 14% a year between 1985 and 1991 nationwide. This would be equivalent to an annual increase of at least 1,000 acres on the Roseburg District as described on page 7 of the *Roseburg District Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995).

The Oregon Department of Agriculture (ODA) has developed a rating system for noxious weeds comparable to that contained in BLM Manual 9015 - Integrated Weed Management. The ODA Noxious Weed Rating System designates weeds as types "A" "B," and "T," equivalent to types "A," "B," and "C" described in BLM Manual 9015 - Integrated Weed Management. Species may be classed in multiple categories.

> Type "A" weeds are of known economic importance which occur in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.
>
> Type "B" weeds are of economic importance which are regionally abundant, but of limited distribution in some counties. Where implementation of a fully-integrated statewide management plan is infeasible, biological control shall be the main approach.
>
> Type "T" weeds are designated by the State Weed Board as target weed species on which the ODA will implement a statewide management plan.
>
> Examples of noxious weeds suspected or previously documented in the project areas include but are not limited to:

"A" Noxious Weed	**"B" Noxious Weeds**	**"T" Noxious Weeds**
Woolly distaff thistle	Bull thistle	Yellow starthistle
Purple starthistle	Canada thistle	Woolly distaff thistle
	Rush skeletonweed	Rush skeletonweed
	Scotch broom	

VII. Fuels Management, Air Quality and Rural Interface Management

Before the advent of intensive fire suppression, fires tended to occur at a greater frequency and were generally of lower intensity. Fire suppression and other management activities have altered natural stand structure and fuel continuity, and have generally resulted in abnormally high accumulations of available fuel. Ladder fuels, characterized by dead limbwood and suppressed understory trees, provide vertical fuel continuity from ground-level to the tree crowns, increasing the risk that a surface fire could become a crown fire. Closed canopies also provide horizontal continuity, increasing the risk that a crown fire could be sustained over greater distances and result in loss of entire stands. While fires tend to occur infrequently, intensities have generally increased. As a consequence, intensively managed second-growth stands are at greater risk for stand-destructive fire events than are natural stands where periodic, low-intensity fires would have removed ladder fuels, and created a more open stand structure and a discontinuous mosaic of fuels characterized by different aged stands.

Both of the proposed units have closed canopies with occasional patches of live fuels in the understory. Surface fuels are characterized by a compacted litter layer of needles and twigs. Occasional jackpots of large fuels, characterized by limbs and logs, are present but are not representative of the typical stand conditions. Ladder fuels are present in the form of dead limbs which extend from the ground to the live tree crowns.

The Oregon Smoke Management Plan identifies Roseburg, Oregon as a Designated Area for smoke management purposes. Unit A is located approximately 19 miles southeast of Roseburg, Oregon and Unit J is approximately 23 miles southeast of Roseburg.

R-5 lands are private lands zoned for 1-5 acre residential lots (ROD/RMP, p. 54). There are no R-5 zoned lands within a ¼ mile of any of the units proposed for treatments, as a consequence there are no Rural Interface Management requirements.

Chapter 4
ENVIRONMENTAL CONSEQUENCES

This chapter discusses the specific resources that would or would not be affected in the short term and long term, by implementation of the alternatives contained in this analysis. The discussion also identifies the potential impacts or consequences that would expected.

I. Alternative 1 - Proposed Action

A. Forest Stand Characteristics

The reductions in tree density following treatment would reduce competition and suppression mortality, accelerate individual tree growth, and allow for the establishment and development of an understory. The accelerated growth rates would shorten the period of time needed to attain large diameter trees. Hardwoods and minor conifer species would be released and maintained as components in the stands. The use of variable and broad space thinning would promote the development of structural diversity, both horizontally and vertically, by retaining trees of varying diameters and heights and allowing sufficient light to penetrate the canopy for development of an understory.

Organon growth modeling projects that the average canopy closure following treatment would be 30-to-40 percent, and indicates that canopy closure in the heavily thinned areas would recover to approximately 70 percent within 10 years of treatment. The variability in the resulting tree density would produce both canopy gaps and tree clumps in the stands. Canopy gaps would encourage the development of understory vegetation necessary for both horizontal and vertical structural diversity. The creation of openings in conjunction with some limited site preparation would encourage the establishment and growth of conifer seedlings, shrubs, and hardwoods (Hayes. 1997).

Following the proposed treatments, the percentage of the stand basal area composed of hardwoods would increase from approximately 3 percent to 5 percent for Unit A. For Unit J, hardwoods would comprise approximately 5 percent of basal area in heavily thinned portions, to 7 percent in areas with a lighter thinning.

Organon modeling indicates that the mean diameters for Unit A would reach an average of 20 inches at approximately 70 years of age, at which point competition between trees in this diameter class would begin to result in the creation of snags greater than 20 inches in diameter. For Unit J, this tree size would be achieved at approximately age 40 years.

Figure 3 was generated by the Stand Visualization System as a representation of the expected stand structure and condition of Unit A. Figure 4 is a Stand Visualization System representation of the stand structure and condition of those portions of Unit J where stem

density would be reduced to approximately 50 trees per acre, and Figure 5 represents the portions of Unit J for which the prescribed density would be 80-90 trees per acre following treatment.

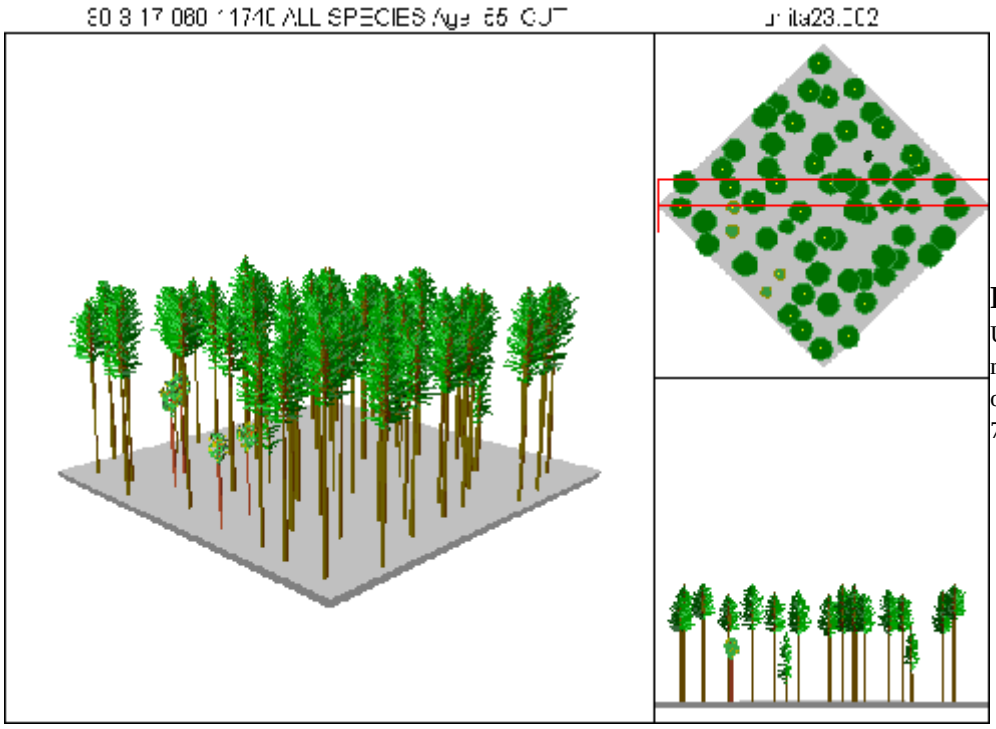


Figure 3
Unit A following density management treatment of variable spacing to 70 TPA.

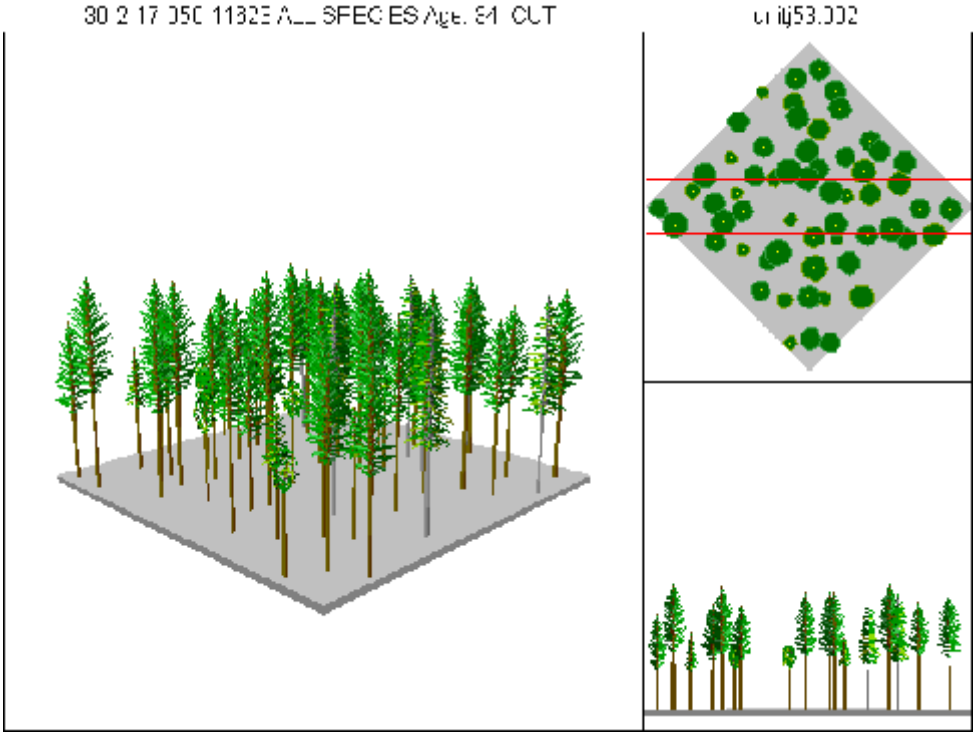


Figure 4
Portion of Unit J after thinning to 50 TPA

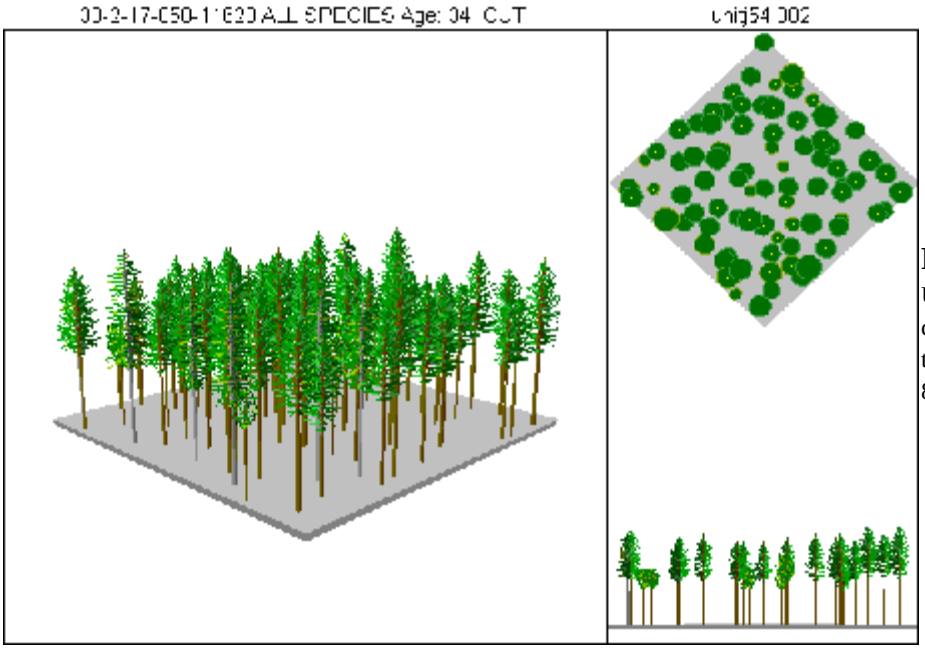


Figure 5
Unit J following density management of thinning from below to 80/90 TPA.

Table 5 compares current stand conditions with conditions anticipated following treatment.

Table 5 Stand Summary Before and After Treatment

	Unit A		Unit J		
	Existing Condition	After Treatment	Existing Condition	After Treatment	
				50TPA	80TPA
Total Age	55	55	34	34	34
Trees per acre - Conifer	201.9	64.6	297.8	47.3	76.8
Trees per acre - Hardwood	4.5	4.5	23.4	7.5	7.5
Basal Area - Conifer (sq. ft.)	178.3	95.0	210.6	74.0	104.0
Basal Area - Hardwood	5.3	5.3	9.6	5.7	5.7
Vol./Acre - Scribner MBF	28.9	16.9	25.5	12.0	15.9
Quadratic Mean Diameter (inches)	12.8	16.3	11.2	16.3	15.4
Organon Relative Density	0.58	0.29	0.73	0.23	0.32
Average Crown Ratio	0.34	0.39	0.44	0.51	0.52
Approximate Crown Closure	78%	42%	93%	33%	46%

Figures 6-9 were generated using Organon growth modeling projections. Figure 6 illustrates the current tree frequency by diameter class for Unit A, as summarized in Table 5, and compares thinned and unthinned conditions relative to representative old-growth conditions. Conditions of the stand at age 90, under each alternative are displayed by Figure 7. The old-growth line (red) is identical for all graphs, but appears to change because of different scales on the y-axis. The area between the no treatment line (blue) and the thinned line (green) represents the trees removed. Expected natural regeneration in the understory is not represented in the graphs. At age 90, the need for another treatment is anticipated if the understory is to be maintained and development of another canopy layer is to occur. Without a second treatment, diameter distributions would remain relatively static, as if no thinning had occurred, as illustrated in Figures 8 and 9.

Figure 6

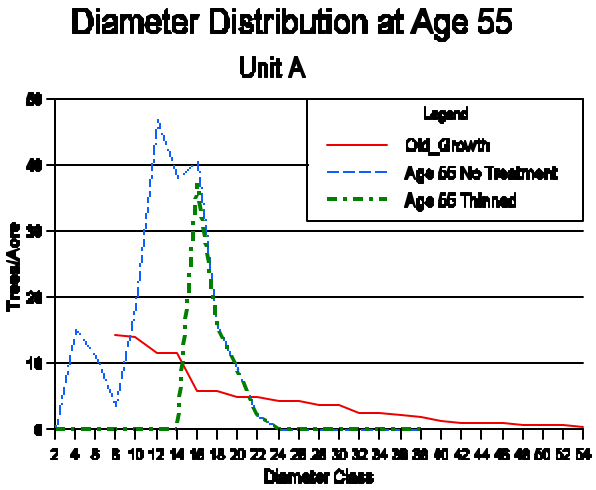


Figure 7

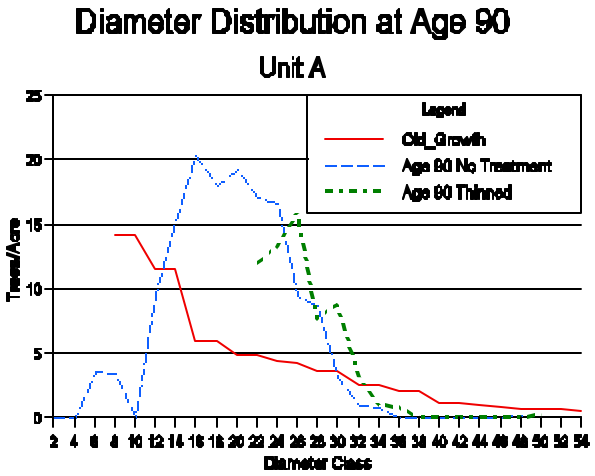


Figure 8

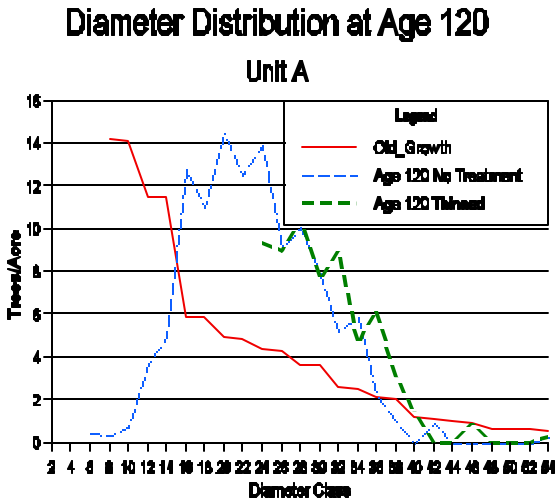
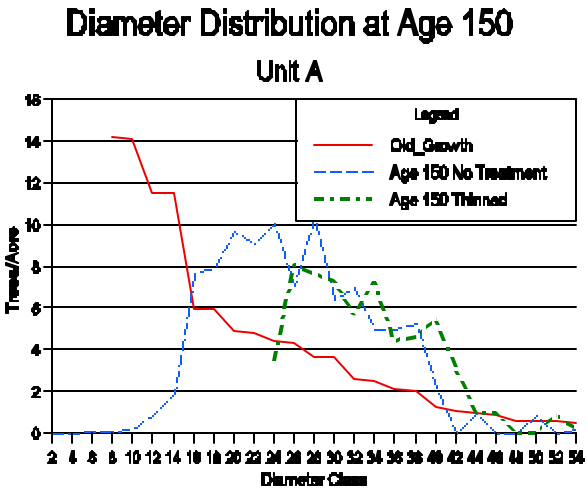


Figure 9



Figures 10-13 are comparable illustrations for the portion of Unit J proposed for thinning to a density of 50 stems per acre south of Road No. 30-2-20.1. Figure 10 represents conditions summarized in Table 5 and Figure 11 illustrates diameter class distributions expected at 59 years of age. After age 59, the need for another treatment is anticipated. Without a second treatment the diameter distributions would remain relatively static as illustrated in Figures 12 and 13. Expected natural regeneration in the understory is not represented in the graphs.

Figure 10

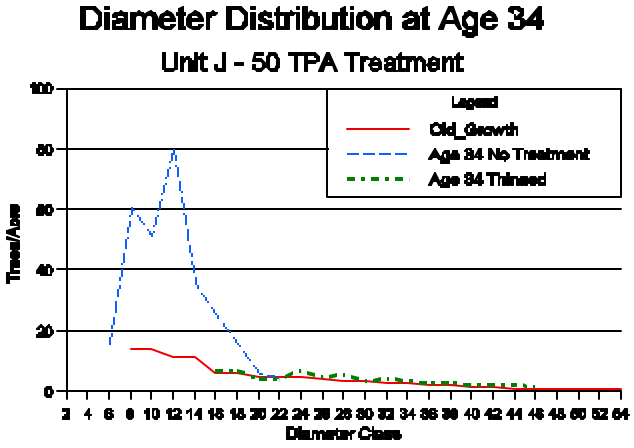


Figure 11

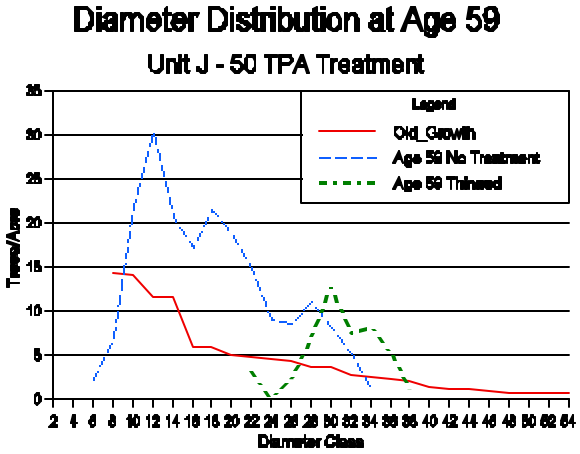


Figure 12

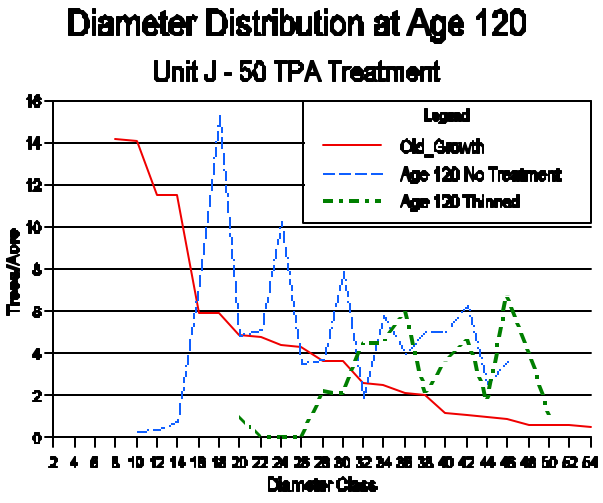
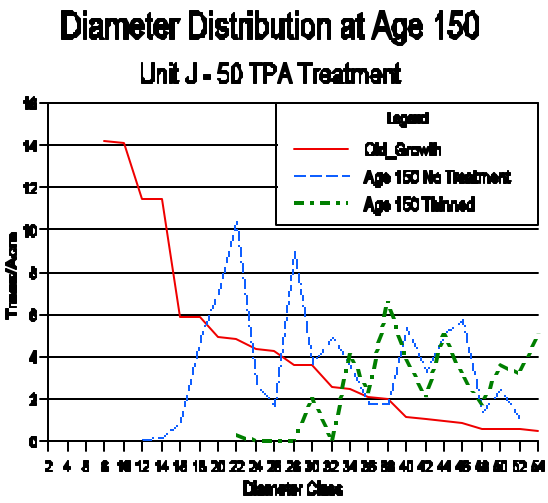


Figure 13



Figures 14-17 represent the expected diameter class distributions for the portion of Unit J to be thinned to a density of 80-90 trees per acre north of Road No. 30-2-20.1. Figure 15 represents diameter distribution at 49 years of age, and Figures 16 and 17 illustrate conditions at 120 years and 150 years in the absence of a second treatment. As previously noted, the old-growth line is identical for all graphs, but appears to change because of different scales on the y-axis. The area between the no treatment line and the thinned line represents the numbers of trees that would be removed. Expected natural regeneration in the understory is not displayed in the graphs.

Figure 14

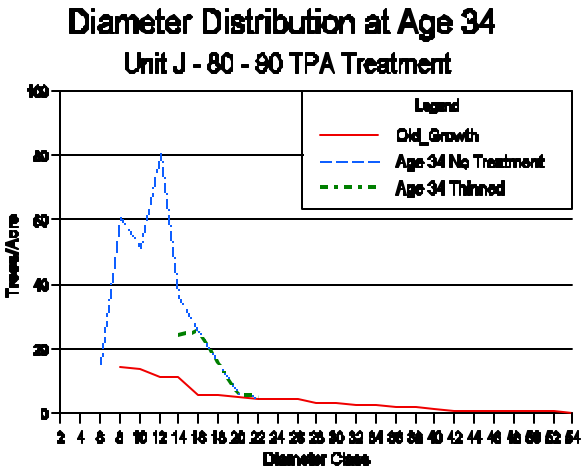


Figure 15

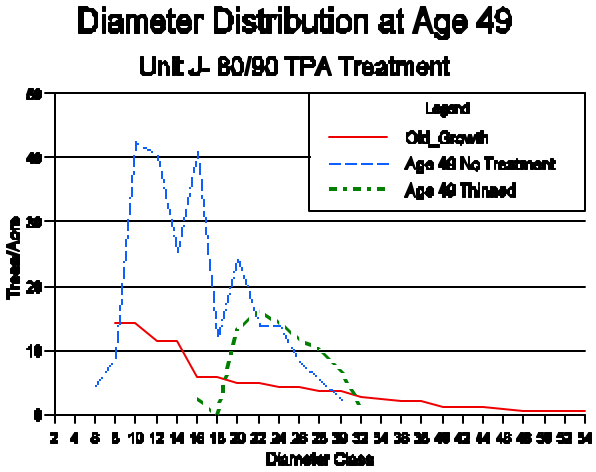


Figure 16

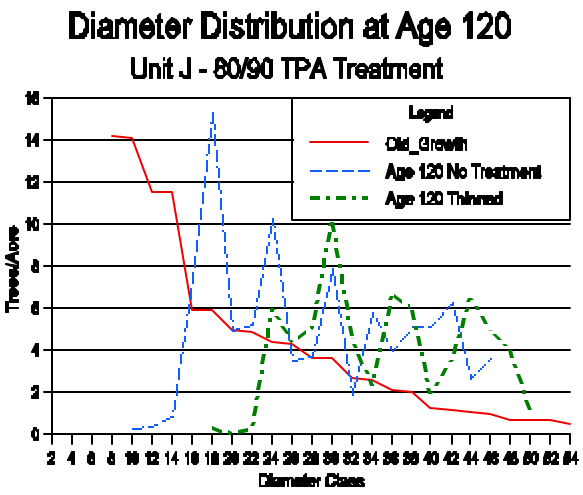
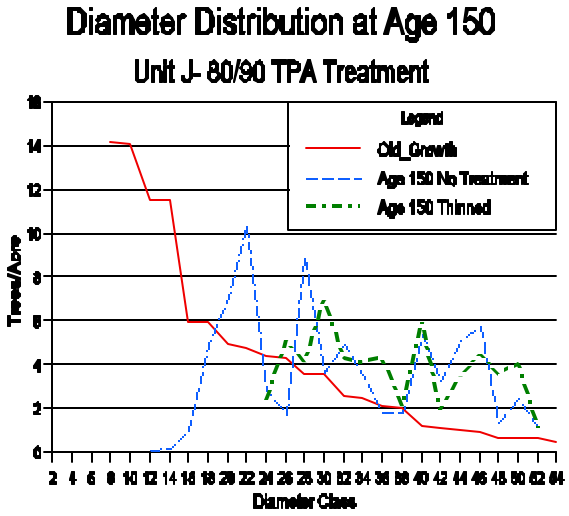


Figure 17



B. Special Status, Special Attention, and Riparian Associated Species

1. Terrestrial Wildlife

a) Threatened and Endangered

Northern Spotted Owl

The proposed density management would create openings in the canopies which could decrease potential use by owls in the short term. This would not reduce owl occupation or habitat productivity within the five home ranges, however, because the proposed action would not occur within any suitable nesting, roosting and foraging habitat and would not reduce suitable habitat below present levels.

In the longer term, the proposed action would benefit the spotted owl by accelerating the development of late-successional habitat characteristics. The density management would increase and improve the quality of suitable habitat by the development of large trees and snags that would provide additional nesting and roosting opportunities an estimated 40 years sooner than would occur in the absence of action. The proposed treatments would create canopy gaps which would allow for the development of additional canopy layers, retention of hardwood tree species, and development of an understory of shrubs and forbes that would provide forage and shelter for prey species such as the dusky-footed woodrat. This would improve foraging habitat for owls.

Since the proposed action would not take place within suitable nesting, roosting and foraging habitat, is outside the activity center of any of the owl pairs identified, and the effects of the habitat modification are projected to result in a short-term loss of the stands as usable forage areas, it was determined to constitute an extremely low or negligible probability of take. As a consequence, the proposed action would constitute a "may affect, not likely to adversely affect" determination for the species.

b) Bureau Sensitive

Surveys are being conducted for the Oregon megomphix snail. If individuals are identified during these surveys, the sites would be protected in accordance with current management guidelines. These management guidelines and direction would provide the necessary level of protection to prevent degradation of habitat and microclimate, which would remove any concerns for the persistence of the species on site. As a consequence, there would be no direct effects on these species.

c) SEIS Special Attention Species (Survey and Manage, Protection Buffer)

Although the red tree vole is more closely associated with late-successional habitat, surveys have documented the presence of red tree voles in stands of the type found in the project area. Surveys of the project area are ongoing. If voles are located, current management guidelines would be applied to the sites. This would protect habitat and microclimate conditions essential for persistence of the species in the short term. (FSEIS. 1994) In the long term, the proposed action would benefit these species through the accelerated development of old-growth forest conditions thought to be favored by the red tree vole.

2. Fish

No direct impacts would be anticipated as a consequence of density management, because no fisheries resources are located immediately within the actual project areas.

The proposed density management would not degrade the present condition of any of the environmental indicators listed in the Matrices of Pathways and Indicators, but would maintain conditions at the watershed level and in some instances would improve conditions at the drainage level for the following reasons:

A. Construction, use, and decommissioning of approximately 200 feet of temporary spur road within the same operating season would not involve the placement of any new stream crossings which would pose physical barriers to passage of aquatic organisms.

B. Within the Riparian Reserves, a no-entry buffer established on either side of intermittent streams would protect stream morphology so that there would be no disturbance of substrates and large wood currently in the stream channels.

C. (1) Existing large down wood within the entire width of the Riparian reserves would be reserved, so that there would be no reduction in the potential recruitment of this material into stream courses. (2) The thinning of trees within the remaining portions of the Riparian Reserves would accelerate the growth of larger trees which would provide future sources for the recruitment of large wood, shortening the period of time in which this would occur, by an estimated 40 years. This material would provide a source of organic nutrients for aquatic organisms upon which fish feed. Eventually, it is anticipated that some of this wood may migrate into perennial streams where it will provide habitat structure for resident and anadromous fish.

D. The streams in the project areas are intermittent in nature and lacking in pool habitat, so pool quality and frequency would not be affected.

E. Thinning within Riparian Reserves would create canopy gaps which would allow sufficient light to penetrate the stand canopy and allow for the establishment and growth of understory vegetation which would increase the complexity of the vegetative community and improve habitat conditions for other riparian-dependent wildlife species.

Federal Threatened or Endangered Species

The anticipated effects of the proposed action constitute a "may affect, not likely to adversely affect" determination for the Oregon Coast coho salmon, because no fish species reside in the immediate project vicinities and the anticipated level of effect on listed fish species downstream of the project areas was determined to constitute an extremely low or negligible probability of take. A Dichotomous Key for making Endangered Species Acts Determination of Effects was used (Appendix B, p. B-3) in making this determination, and indicates that there may be a potential affect to fisheries resources. The anticipated effects were primarily derived from the MPIs. None of the anticipated effects was determined to be measurable at the project level, nor would any environmental indicators be degraded at the project level.

3. Plants

Surveys of potential habitat for special status species of vascular plants are underway and will be completed in the Spring of 2001. If any species are located, no effects from the proposed density management are anticipated, because known sites would be protected or other mitigation incorporated into the project design consistent with management direction for the protection and persistence of each species.

Protocol surveys of potential suitable habitat for Special Attention vascular and non-vascular plant species will also be completed in the Spring of 2001. If any listed species are located during surveys, the sites would be managed in accordance with current management direction. No direct or indirect impacts would occur, because the applicable management direction would protect habitat and microclimate conditions essential to the persistence of any species located (FSEIS, 1994).

4. Riparian Associated Species

There could be short-term consequences associated with density management in Riparian Reserves, in the form of disturbance or modification of present habitat conditions. No long-term consequences would be expected, because actual physical structure and micro-climatic conditions of streams would be protected and maintained through the establishment of variable width buffers, and through requirements for directional felling away from these buffers and a prohibition on yarding through them.

Thinning in the outer portions of Riparian Reserves would retain a minimum average of 50 percent canopy closure to maintain shade and protect microclimate. Canopy closure is projected to return to a minimum of 70 percent within 10 years of density management. While physical disturbance of down woody debris would be expected, this material would be reserved under contract provisions and retained on site as a habitat component used by various mollusks and amphibians. As a consequence, it is anticipated that the numbers and distribution of riparian associated species would not be greatly affected in the short term and would benefit in the long term, as the effects of the density management would enhance riparian conditions and increase habitat complexity beneficial to these species.

C. Water Resources

No direct consequences to water quality are expected as a result of the proposed density management treatments. Streams in the project areas are intermittent in nature and not subject to solar heating in the summer that could lead to increases in water temperatures. No-entry buffers in conjunction with lighter treatments in Riparian Reserves will also maintain a high degree of shading directly along these stream channels.

No increases in sediment, measurable at a fifth-field watershed level are expected. Where sediments are generated by management activities, the effects are anticipated to be localized and short-term, persisting only through the first winter following the associated activities, for the following reasons: 1) Proposed road construction and renovation, timber yarding, timber hauling and road decommissioning would be restricted to the dry season from May 15 through October 15. At this time of year, intermittent stream channels and road ditches would be dry, so there would be no flowing water to transport sediments into perennial waterways. 2) Surfacing of natural roads with rock would reduce surface erosion and rutting which could serve to deliver sediment to active water courses. 3) Waterbars would be constructed on yarding roads where deemed necessary to divert run off and prevent transport of sediment into stream courses. 4) Disturbed areas associated with road renovation, construction or decommissioning would be mulched and revegetated to reduce the probability of surface erosion that would provide potential sources of sediment. 5) The undisturbed “no-entry” buffers established along stream channels would serve to intercept overland flow and precipitate sediment before it reaches water bodies.

Channel condition and dynamics that include width/depth ratio, streambank condition and floodplain connectivity are expected to be unaffected because the “no-entry buffers” would protect the integrity of stream morphology. Additionally, no road construction is proposed which would require stream crossings and the disconnection of stream reaches from the hydrological system.

Thinning under the density management action would not increase peak flows because of the level of canopy and vegetation that would remain to intercept precipitation, and maintain high levels of evapotranspiration. While roads have also been linked to possible increases in peak flows, there would be no increase in road densities which could affect present flow rates. Because there would be no increase in the number of roads and associated ditch lines, there would also be no increase in the drainage network.

Watershed conditions would remain relatively unchanged as a whole because there would be no increase in road density or disturbance history. The proposed action would, however, afford some measure of restoration by decommissioning of selected roads, and by accelerating the development of late-successional forest conditions within Riparian Reserves. These improvements would be of a localized nature, though, and would not be measurable at a fifth-field watershed scale.

D. Soils

Potential consequences arising from the proposed density management and associated activities would consist of erosion resulting from surface disturbance associated with unrocked roads, yarding operations, road construction, road renovation and road decommissioning; soil compaction and productivity loss resulting from ground-based harvest operations; and loss of organic horizons as a consequence of yarding and site preparation treatments. The following mitigation would reduce impacts to levels identified and addressed in the Roseburg District PRMP/EIS.

Surfacing of unrocked roads that will be retained in the transportation network would reduce erosion and soil loss associated with road use in wet weather. Weatherizing and closing dirt roads not needed for management purposes would reduce erosion by reestablishing proper surface drainage and preventing surface disturbance during wet weather.

Revegetating soils exposed during road renovation, construction and decommissioning, and revegetating tilled skid trails would reduce potential surface erosion, soil loss and associated losses in site productivity.

Restricting ground-based operations to existing skid trails and limiting the number of passes over areas without skid trails would limit the percentage of acres subject to potential compaction to less than 10 percent, consistent with management objectives and direction contained in the ROD/RMP. This would also reduce the percentage of the surface horizons that would be disturbed with an accompanying displacement and loss of organic material and nutrients. Selective tilling of skid trails and other areas identified as highly compacted would restore a measure of productivity by reducing bulk density of the upper soil horizons, consistent with management direction to restrict productivity loss to less than 1 percent.

Requiring a minimum of one-end log suspension during cable yarding would reduce the amount of displacement of organic material and surface horizons. Requiring minimum lateral yarding capability of a minimum of 100 feet would also help retain these soil components by minimizing the percentage of the units that would be subject to surface disturbance.

Limiting hand piling for site-preparation to smaller material and retaining larger diameter limbs and debris would retain a source of organic matter for future soil enrichment. Burning of hand piles in the fall and winter months when soil and duff moisture contents will minimize the consumption of organic surface layers and reduce loss of nutrients.

E. Noxious Weeds

The BLM has a strategic plan for dealing with Noxious Weeds addressed in the Roseburg District *Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995). This environmental assessment is tiered to the *Northwest Area Noxious Weed Control Program Environmental Impact Statement* (USDI. 1985) and *The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program* (USDI. 1987).

Implementation of the *Integrated Weed Control Plan* by the District would continue in an effort to prevent or reduce rates of spread of weed populations. There would be no anticipated increases or decreases in the size and extent of noxious weed populations.

F. Fuels Management and Air Quality

The proposed density management of Unit A is projected to generate an average of approximately 14 tons/acre of activity-based fuels (logging slash) per acre. Of that amount, approximately 9 tons/acre would be fine fuels less than 3 inches in diameter, the sizes that influence the potential for ignition and the rate of fire spread. The balance of the material would be greater than 3 inches in diameter, the material responsible for fire intensity and duration. For Unit J, density management would generate an estimated 16 tons/acre of fine fuels and 14 tons/acre of material greater than 3 inches in diameter.

In the first 1-3 years following treatment, there would be an increased risk of fire and habitat loss in the project stands and adjoining stands associated with the fine fuels created by the density management treatment. This would be largely offset by hand piling and burning material less than 3 inches in diameter in selected areas of the two units. In addition to providing areas for underplanting, the treatment would remove a portion of the available ignition component and would create discontinuity in the fuel regime that would slow or prevent the spread of fire in the event of an ignition. The discontinuity in stand configuration that would be created by the treatments would largely offset the increased risk of loss to fire and would reduce the long-term risk of a stand replacing event.

Pile burning would be accomplished in the wetter autumn and winter months when soil moisture is high, to reduce the risk of soil damage and the consumption of organic material in the surface horizons. This would also reduce the risk of fire spreading to areas not intended for treatment. Weather conditions at this time of year would disperse smoke. Consequences to air quality would be minimal with burning conducted under approved clearance and in accordance with the Oregon Smoke Management Plan.

II. Alternative 2 - No Action

A. Timber/Vegetative Resources

Based on current conditions, these stands would continue to develop as even-aged, single storied conifer stands until a disturbance alters the present stand structure and developmental trajectory. In the absence of a natural disturbance, such as fire, the stands would continue to lack many structural characteristics associated with old-growth forests.

Organon growth modeling was used to project the existing stands out to 150 years of age. Table 6 summarizes the expected stand conditions at that time.

Table 6 Stand Summary if not Treated

	Unit A	Unit J
Total Age	150	149
Trees per acre - Conifer	98.2	77.5
Trees per acre - Hardwood	1.1	6.8
Basal Area - Conifer	371.1 sq.ft.	446.7 sq.ft.
Basal Area - Hardwood	3.1 sq.ft.	8.0 sq.ft.
Quadratic Mean Diameter	26.3"	31.5"
Organon Relative Density	.89	1.00
Mean Crown Ratio	.19	.30
Approximate Crown Closure	95%	87%

Canopy gaps and multilayered of canopies would generally be absent, and the presence of hardwoods in the stands would continue to decline as a consequence of overtopping and suppression. Creation of snags and down wood would continue as a result of suppression mortality, but most of these would be in the smaller diameter classes. The amounts of down wood and number of snags desired would be met, but the material would be of smaller sizes and would not persist in the stand for the desired lengths of time.

The development of large snags and down wood would not occur until the stand reaches a point where suppression mortality is affecting trees greater than 20 inches in diameter. Organon modeling indicates that Unit A would not reach an average diameter of 20 inches until an age of 100 years, 30 years later than if treated. Unit J would not reach this stage until approximately age 74, approximately 34 years later than if treated. Species diversity would decrease as the stands approach 150 years of age. In Unit A, the percentage of the stand composed of Douglas-fir would increase from the current level of 97 percent, to 99 percent of the stand by basal area. Unit J is composed of 95 percent conifers by basal area, which would increase to 98 percent. The desired future conditions include a minimum of two large hardwoods per acre at the time of regeneration harvest. Without intermediate treatment(s), hardwoods would become virtually nonexistent in Unit A and would account for less than 2 percent of the total basal area in Unit J at age 149, compared with present levels of 3 percent and 5 percent, respectively.

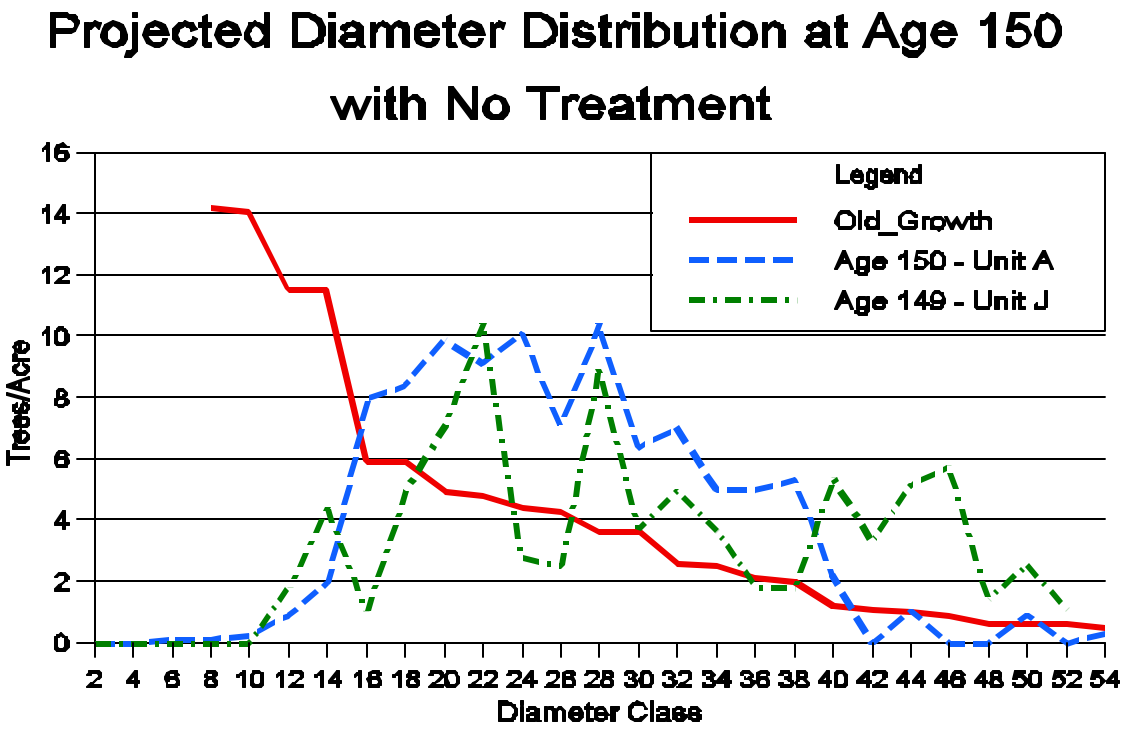


Figure 18

The graph illustrates that although the numbers of large trees greater than 20 inches in diameter would meet desired future condition criteria, the overall diameter distribution of the stands would not. They would lack the smaller diameter trees present in old-growth stands, and a

continuation of closed canopy conditions would not allow for the establishment of an understory association. Live crown ratios of the overstory trees would gradually recede to approximately 20 percent compared to the current levels of 34 to 44 percent.

B. Special Status, Special Attention, and Riparian Associated Species

1. Terrestrial Wildlife

a) Threatened and Endangered

Northern Spotted Owl

An alternative of no action would not directly effect the species in the short term, because present levels of suitable habitat in the five home ranges would remain unchanged and there would no modification of habitat in the project areas. Current availability of the project stands for foraging and dispersal would remain unchanged.

Assuming that there is no disturbance to the present developmental trajectory of these stands, an indirect consequence that would arise would be a gradual decline in suitability for foraging as understory shrubs and hardwood tree species are suppressed and die out, resulting in a decline in habitat and forage for those species that the spotted owl preys upon. Another consequence would be a delay of up to 40 years in the development of late-successional characteristics and structure that would provide suitable nesting and roosting opportunities for the species.

b) Bureau Sensitive

There would be no immediate and direct consequences to the Oregon megomphix snail as a result of no action. Current stand composition and structure would continue to provide usable habitat for the species in the near term. Over the long term, however, hardwoods would continue to die out as a result of suppression, gradually eliminating from the stands a habitat characteristic believed to be of importance to the species.

c) *SEIS Special Attention Species* (Survey and Manage, Protection Buffer)

Red Tree Vole

Current stand conditions support red tree voles, with closed canopies providing cover and dispersal paths. Although the species favors old-growth forest conditions, an alternative of no action would not effect the current usage of these stands. In the long term, the stands would continue to provide usable habitat, though of lesser quality than would exist in late-successional habitat characterized by multilayered canopies.

2. Fish

The no action alternative would not directly affect listed and candidate fish species. Indirect and cumulative impacts affecting fish populations and habitat at the watershed level that are associated with current improperly functioning watershed conditions of physical barriers to migration, insufficient large woody debris, and inadequate pool frequency identified in watershed analyses and the National Marine Fisheries Service MPI would be expected to continue.

3. Plants

There would be no direct impacts to any vascular or non-vascular plants identified as either special status or special attention species as a consequence of a no action alternative.

There would be no management-related activities which would constitute disturbance or modification of present or potential habitat for the species. Species dependent upon early seral stages would be indirectly affected in the long term as normal processes of vegetative succession gradually modify habitat and allow for the establishment of new plant communities more adaptable to the new habitat conditions.

4. Riparian Associated Species

No direct impacts to any species using riparian areas as primary or secondary habitat would be expected as a consequence of no action. Habitat components utilized by these species would remain intact and available at current levels in the short term. In the long term, stands would mature without the development of structural characteristics typical of late-successional forest and habitat. While these stands would provide usable habitat for some species, the simplification of stand structure would not provide the full range of habitat niches typically present, and would subsequently not support the full range of species normally found in late-successional forests.

C. Water Resources

Recruitment of large wood into Riparian Reserves would be delayed as a consequence of no action. Suppression mortality would only supply small diameter material which would not persist over time. This lack of large wood could affect the quality and abundance of stream structure that provide habitat for aquatic organisms, and serves to moderate stream velocity and channel scouring. The recruitment patterns for large woody debris and the diversity of in-stream structure would be greatly simplified and would not be consistent with in-stream structure characteristic of old-growth forest and habitat conditions. This condition would be expected to persist for an extended period of time, possibly for more than a century.

There would be no road renovation or road decommissioning which could otherwise serve to reduce sediment associated with roads and stream crossings, and afford a measure of restoration within the affected watersheds. Accomplishment of these identified restoration opportunities would require completion of a separate analysis of environmental consequences, a decision based on that analysis, and alternative funding.

D. Soils

Under an alternative of no action, there would be no soil disturbance or displacement which could potentially lead to surface erosion, soil compaction or loss of organic horizons. Compaction from previous ground-based entries would continue to influence site productivity in the absence of tilling to reestablish normal bulk density of the upper soil horizons. These problems would pending completion of a separate analysis of environmental consequences, a decision based on that analysis, and alternative funding.

E. Noxious Weeds

The BLM has a strategic plan for dealing with Noxious Weeds addressed in the Roseburg District *Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995). This environmental assessment is tiered to the *Northwest Area Noxious Weed Control Program Environmental Impact Statement* (USDI. 1985) and *The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program* (USDI. 1987).

There would be no anticipated increases or decreases in the size and extent of noxious weed populations. Implementation of the *Integrated Weed Control Plan* by the District would continue in an effort to prevent or reduce rates of spread of weed populations.

F. Fuels Management and Air Quality

There would be no consequences to air quality because there would be no need for hand piling and burning for hazard reduction and site preparation in the absence of density management.

Under present fuel conditions, most fires would occur as slow spreading surface fires with short flame lengths. Occasional jackpots of heavier surface fuels would cause flare-ups. Only under severe weather conditions of extreme temperatures, low humidity, and high winds do these fuels pose fire hazards. Fires would generally not be very intense because surface fuels are light. Where greater quantities of dead and down fuel exists, fires would burn with greater intensity and increased torching, spotting and occasional crowning of individual trees would be expected. Standardized fire behavior fuel models for estimating fire behavior provide a general baseline condition. Crown scorch and tree mortality estimates for a 12-inch diameter Douglas-fir tree with 40 percent live crown indicate most trees of this size class would survive a surface fire. On a 40 percent slope with no wind, fire growth after two hours is estimated to be less than 2 acres.

Because fuel characteristics are not static, surface fuels, ladder fuels, and crown structure will change as the stands mature. In absence of wildfire or management treatments there would be increases in surface fuels as a consequence of suppression and other natural mortality of some trees occur. Natural events such as wind storms and insect infestations may contribute additional fuel. The vertical continuity of ladder fuels would decrease as trees mature and naturally prune themselves, increasing the distance between surface fuels and live crowns. As a consequence, these trees would become more resistant to fires of low and moderate intensities. At the same time surface fuel accumulations increase, the potential for fires of high intensity would increase. Closed canopy conditions would continue to provide horizontal continuity, so that if a fire reached the canopy there would be an increase in the risk that a crown fire could be sustained over longer distances and result in larger stand replacing events.

III. Monitoring

Monitoring would be done in accordance with the ROD/RMP, Appendix I (p. 84, 190-191, & 193-199). Monitoring efforts would be targeted at the following resources: Riparian Reserves, Matrix, Air Quality, Water and Soils, Wildlife Habitat, Fish Habitat, and Special Status and SEIS Special Attention Species Habitat.

Chapter 5
LIST OF PREPARERS, AND AGENCIES AND INDIVIDUALS CONTACTED OR CONSULTED, AND LITERATURE CITED

This project was included in the Roseburg BLM Project Planning Update (Spring 2000). A notice of decision would be published in the Roseburg *News-Review* if the decision is made to implement the project.

I. **Agencies & Persons Contacted:**

Adjacent Landowners
Registered Down-Stream Water Users
Cow Creek Band of Umpqua Indians
Dr. John Tappeiner, Ph.D., Oregon State University
Dr. Don Goheen, Ph.D., Southwest Oregon Forest Insect and Disease Technical Center

II. **The following agencies, organizations, and individuals will be notified of the completion of the EA/FONSI:**

Steve Carter, Northwest Hardwoods
Cow Creek Band of Umpqua Indians
Nicole Czarnomski, Oregon Natural Resources Council
Robert P. Davison, Wildlife Management Institute
Francis Eatherington , Umpqua Watersheds, Inc.
Chad Hanson, John Muir Project
Daniel Johnson, Douglas Timber Operators
Douglas Forest Protective Association
National Marine Fisheries Service
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Ronald Yockim, Attorney for Douglas County Commissioners
U.S. Fish and Wildlife Service

List of Preparers:

Bill Adams	Fuels Management
Paul Ausbeck	EA Coordinator and Editor
Gary Basham	Botany
Mark Beardsley	Forestry
Jeannette Griese	Silviculture/EA Writer
Ed Horn	Soils
Todd Kuck	Hydrology
Dave Mathweg	Recreation/Visual Resource Management
Frank Oliver	Wildlife/Project Lead
John Royce	Management Representative
Don Scheleen	Archaeology
Scott Snedaker	Fisheries

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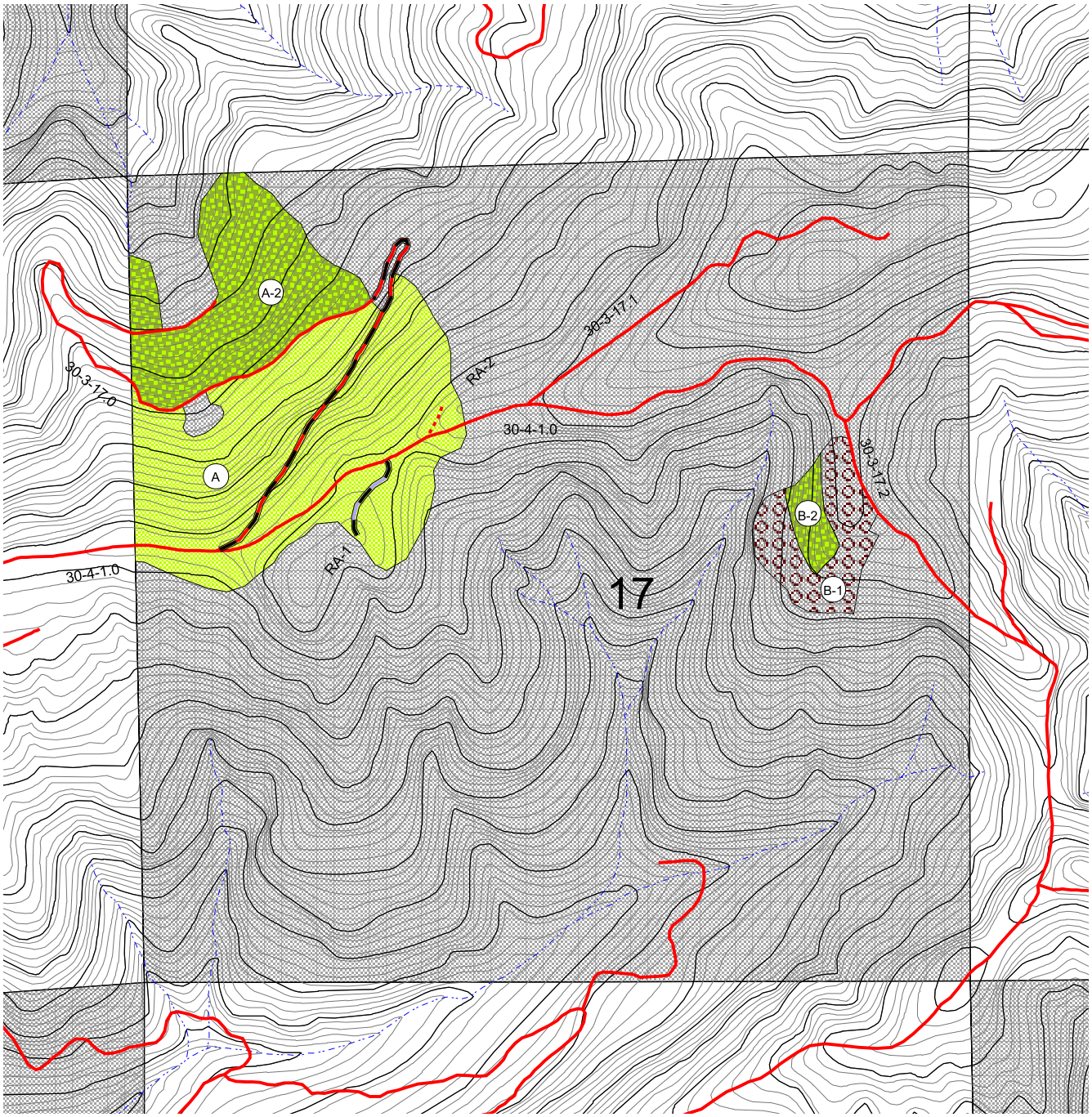
APPENDIX A

PROPOSED TREATMENT UNITS
AND
PROJECT AREA ACCESS

S.U. CONNECTIVITY DENSITY MANAGEMENT PROJECT



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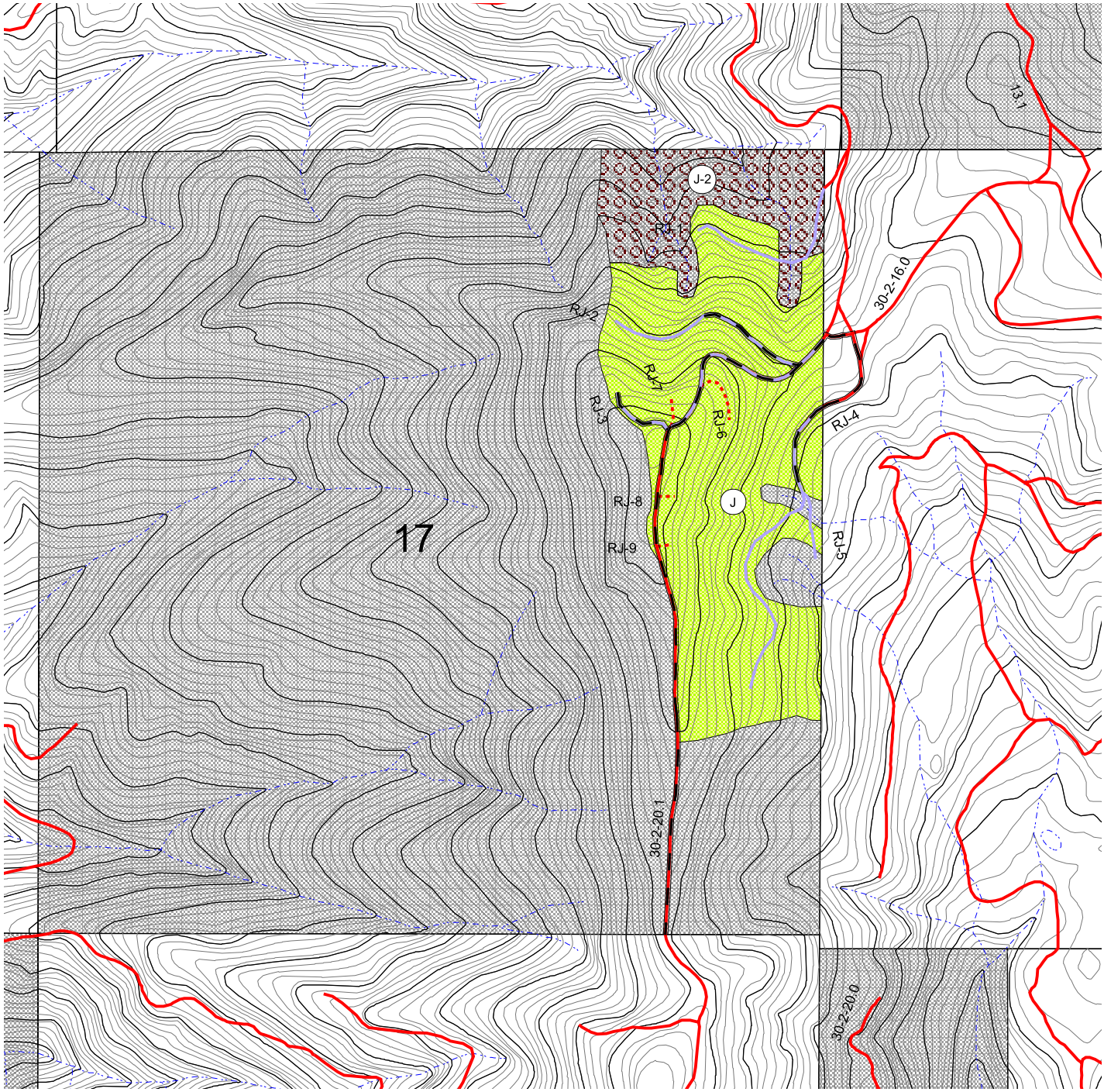
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

100' Contour
20' Contour
Riparian
Road To Be Renovated
Road To Be Renovated/Decomm.
Existing Road
Road To Be Constructed/Decomm.

Precommercial Thin Area
Considered/Eliminated
Thinning Area
O&C Land
Private Land

8-17-2000

S.U. CONNECTIVITY DENSITY MANAGEMENT PROJECT



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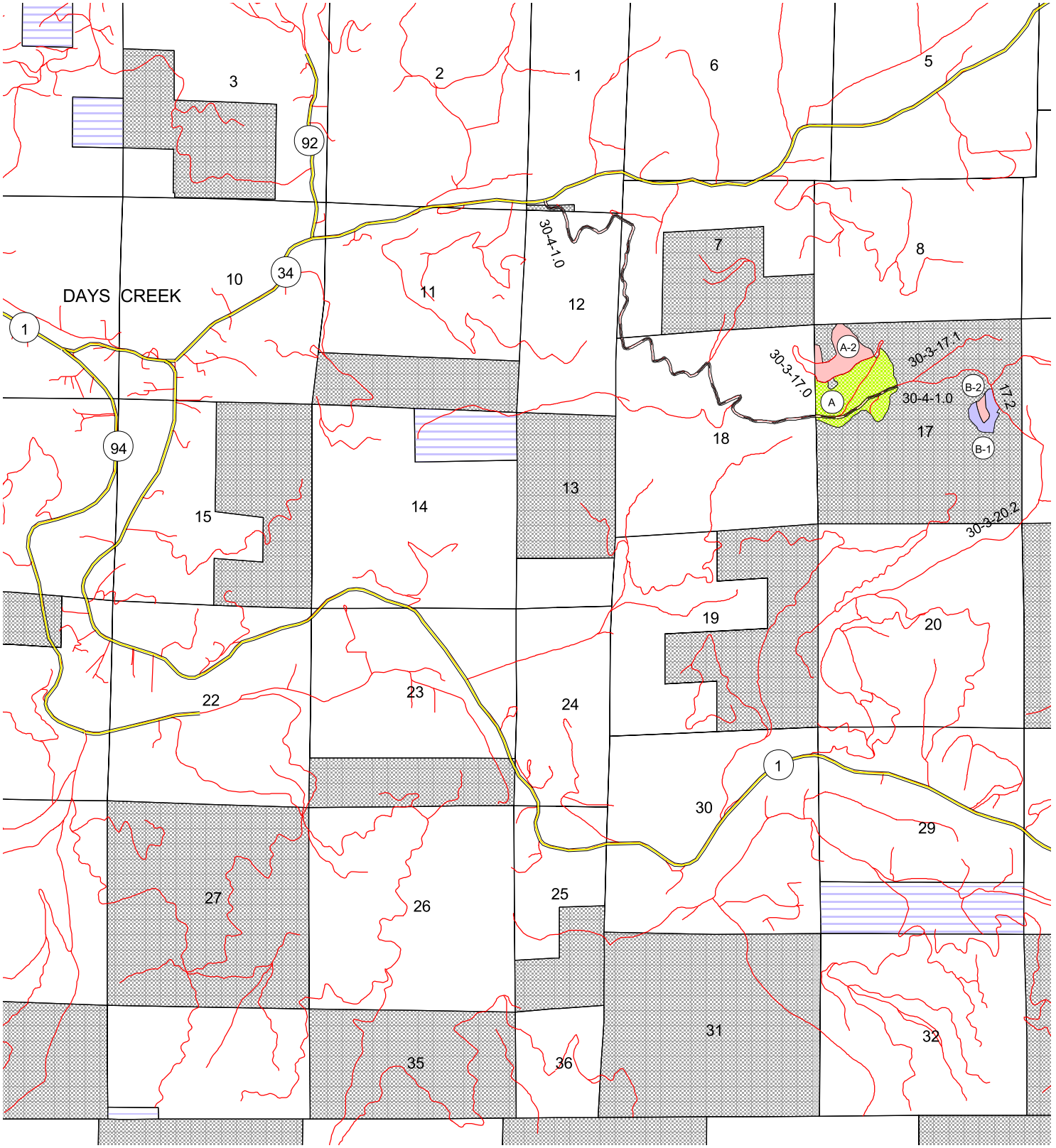
100' Contour
20' Contour
Riparian
Road To Be Decomm.
Road To Be Renovated
Road To Be Renovated/Decomm.
Existing Road
Road To Be Constructed/Decomm.

Considered/Eliminated
Thinning Area
O&C Land
Private Land

8-17-2000

S.U. CONNECTIVITY DENSITY MANAGEMENT PROJECT



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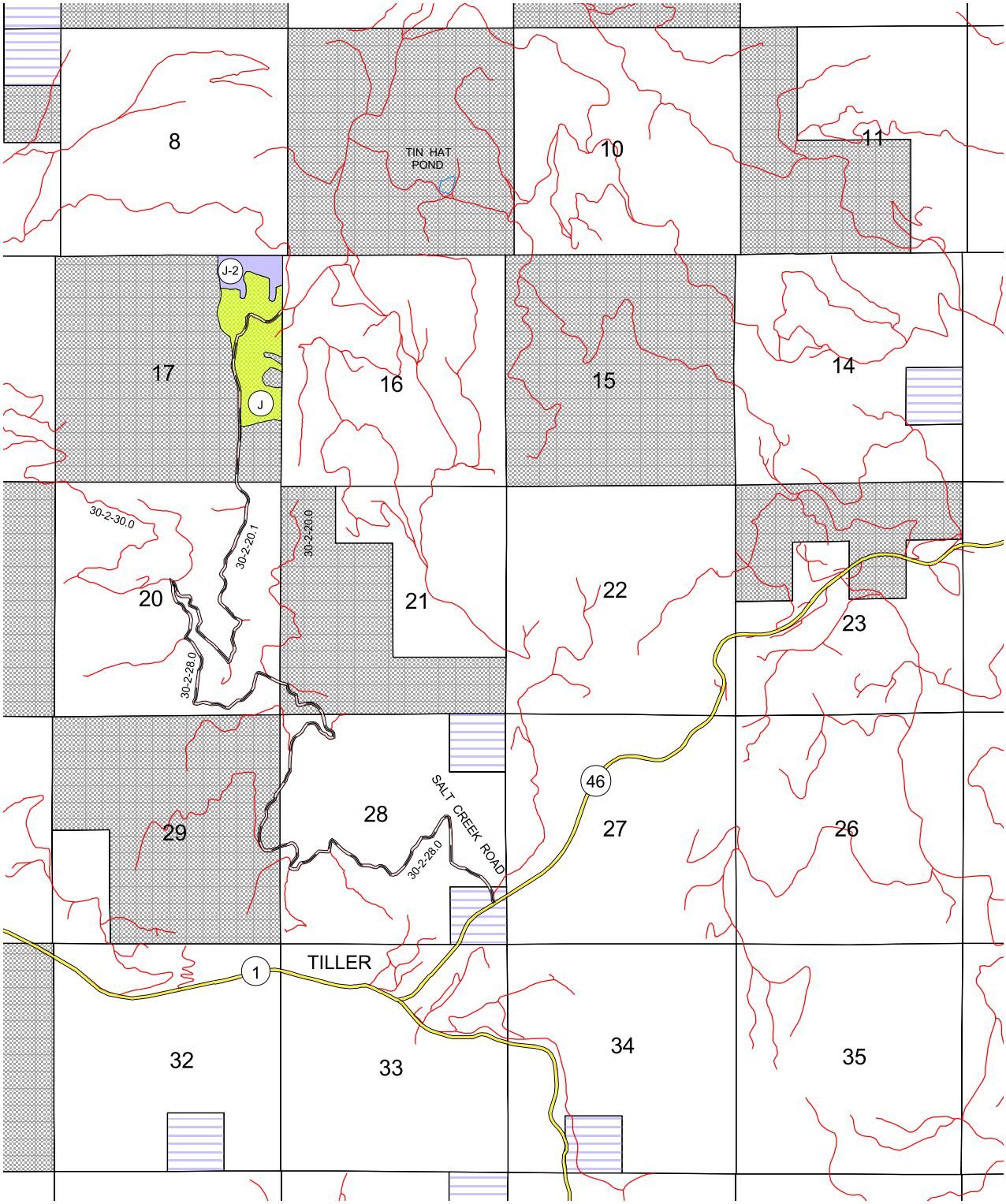
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Access Route
County Highway
Existing Road

PCT Area
Considered /Eliminated
Thinning Area
O&C Land
PD Land
Private Land

8-17-2000

S.U. CONNECTIVITY DENSITY MANAGEMENT PROJECT



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Willamette Meridian, Roseburg, OR.

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No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Access Route
County Highway
Existing Road

Considered /Eliminated
Thinning Area
O&C Land
PD Land
Private Land

8-17-2000

APPENDIX B

AQUATIC ENVIRONMENTAL BASELINE CONDITIONS

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Lower Coffee Creek 7TH field watershed (drainage) level. Index stream reach: Coffee Creek, Reach #1

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		54% canopy closure, ODFW hab. Inventory			NEPA	
Sediment/Turbidity	ODFW hab. Inventory				NEPA	
Chem. Contam./Nut.	prof. judgment				NEPA	
Habitat Access						
Physical Barriers	ODFW hab. Inventory				NEPA	
Habitat Elements						
Substrate	ODFW hab. Inventory				NEPA	
Large Woody Debris			ODFW hab. Inventory		NEPA	
Pool Frequency		ODFW hab. Inventory			NEPA	
Pool Quality		ODFW hab. Inventory			NEPA	
Off-Channel Habitat*		John Days Coffee WA, prof. judngment			NEPA	
Refugia*		John Days Coffee WA, prof. judngment			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio	ODFW hab. Inventory				NEPA	
Streambank Condition	ODFW hab. Inventory				NEPA	
Floodplain Connectivity			John Days Coffee WA, prof. judngment		NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee WA, prof. judngment			NEPA	
Drainage Network Incr.*			John Days Coffee WA, prof. judngment		NEPA	
Watershed Conditions						
Road Dens. & Location*			John Days Coffee WA, prof. judngment		NEPA	
Disturbance History*			John Days Coffee WA, prof. judngment		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. judngment		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Lavadoure Creek 7TH field watershed (drainage) level. Index stream reach: Lavadoure Creek, Reach #1

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		BLM 1999 data			NEPA	
Sediment/Turbidity	ODFW hab. Inventory				NEPA	
Chem. Contam./Nut.	prof. judgement				NEPA	
Habitat Access						
Physical Barriers	ODFW hab. Inventory				NEPA	
Habitat Elements						
Substrate	ODFW hab. Inventory				NEPA	
Large Woody Debris			ODFW hab. Inventory		NEPA	
Pool Frequency			ODFW hab. Inventory		NEPA	
Pool Quality		ODFW hab. Inventory			NEPA	
Off-Channel Habitat*		John Days Coffee WA, prof. Judgment			NEPA	
Refugia*		John Days Coffee WA, prof. Judgment			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio	ODFW hab. Inventory				NEPA	
Streambank Condition	ODFW hab. Inventory				NEPA	
Floodplain Connectivity		John Days Coffee WA, prof. Judgment			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee WA, prof. Judgment			NEPA	
Drainage Network Incr.*			John Days Coffee WA, prof. Judgment		NEPA	
Watershed Conditions						
Road Dens. & Location*			John Days Coffee WA, prof. Judgment		NEPA	
Disturbance History*			John Days Coffee WA, prof. Judgment		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. Judgment		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Green Gulch 7TH field watershed (drainage) level. Index stream reach: Days Creek, Reach #2

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		BLM data, Douglas Co. Water Res. Div.			NEPA	
Sediment/Turbidity			ODFW hab. inventory		NEPA	
Chem. Contam./Nut.		personal obs.			NEPA	
Habitat Access						
Physical Barriers*			personal obs.		NEPA	
Habitat Elements						
Substrate	ODFW hab. inventory				NEPA	
Large Woody Debris			ODFW hab. inventory		NEPA	
Pool Frequency			ODFW hab. inventory		NEPA	
Pool Quality		ODFW hab. inventory			NEPA	
Off-Channel Habitat*		John Days Coffee WA, prof. judgement			NEPA	
Refugia*		John Days Coffee WA, prof. judgement			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio			ODFW hab. inventory		NEPA	
Streambank Condition		John Days Coffee WA, prof. judgement			NEPA	
Floodplain Connectivity		John Days Coffee WA, prof. judgement			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		John Days Coffee WA, prof. judgement			NEPA	
Drainage Network Incr.*			John Days Coffee WA, prof. judgement		NEPA	
Watershed Conditions						
Road Dens. & Location*			John Days Coffee WA, prof. judgement		NEPA	
Disturbance History*			John Days Coffee WA, prof. judgement		NEPA	
Riparian Reserves*			John Days Coffee WA, prof. judgement		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Dompier Creek 6TH field watershed (subwatershed) level. Index stream: Dompier Creek, reach 1 used as representative of the overall subwatershed condition.

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		CWA 303d			NEPA	
Sediment/Turbidity		ODFW			NEPA	
Chem. Contam./Nut.		CWA 303d			NEPA	
Habitat Access						
Physical Barriers			personal obs.		NEPA	
Habitat Elements						
Substrate	ODFW				NEPA	
Large Woody Debris			ODFW		NEPA	
Pool Frequency			ODFW		NEPA	
Pool Quality		ODFW			NEPA	
Off-Channel Habitat*		prof. judgement			NEPA	
Refugia*		Deadman/Dompieer WA			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio		ODFW			NEPA	
Streambank Condition		Deadman/Dompieer WA			NEPA	
Floodplain Connectivity		Pfankuch Surveys Dompier Creek			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		Deadman/Dompieer WA			NEPA	
Drainage Network Incr.*			Deadman/Dompieer WA		NEPA	
Watershed Conditions						
Road Dens. & Location*			Deadman/Dompieer WA		NEPA	
Disturbance History*			Deadman/Dompieer WA		NEPA	
Riparian Reserves*			Deadman/Dompieer WA		NEPA	

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

Checklist for documenting environmental baseline and effects of proposed action on indicators at the South Umpqua 5TH field watershed level. Index stream reach: South Umpqua River, personal observation and professional judgement was used for environmental baseline of un-inventoried stream reaches.

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		prof. judgementC			NEPA	
Sediment		prof. judgementC			NEPA	
Chem. Contam./Nut.	prof. judgement				NEPA	
Habitat Access						
Physical Barriers*			personal observ.		NEPA	
Habitat Elements						
Substrate		prof. judgement			NEPA	
Large Woody Debris			prof. judgement		NEPA	
Pool Frequency		prof. judgement			NEPA	
Pool Quality		prof. judgement			NEPA	
Off-Channel Habitat*			prof. judgement		NEPA	
Refugia*		prof. judgement			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio		prof. judgement			NEPA	
Streambank Condition		prof. judgement			NEPA	
Floodplain Connectivity		prof. judgement			NEPA	
Flow/Hydrology						
Peak/ Base Flows*			WA, prof. judgement		NEPA	
Drainage Network Incr.*			WA, prof. judgement		NEPA	
Watershed Conditions						
Road Dens. & Location*			WA, prof. judgement		NEPA	
Disturbance History*			WA, prof. judgement		NEPA	
Riparian Reserves*			WA, prof. judgement		NEPA	

* This indicator is evaluated at the entire 5th field watershed level and not at the index stream reach level.

C Judgement based on temperature and sediment data for the South Umpqua River provided in ODEQ 1998 303d report.

Checklist for documenting environmental baseline and effects of proposed action(s) on indicators at the Middle South Umpqua River/Dumont Creek 5TH field watershed level. Index stream reach: South Umpqua River, personal observation and professional judgement was used for environmental baseline of uninventoried stream reaches

FACTORS & INDICATORS?	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	PROPERLY FUNCTIONING	AT RISK	NOT PROPERLY FUNCTIONING	RESTORE	MAINTAIN	DEGRADE
Water Quality						
Temperature		CWA 303d			NEPA	
Sediment		prof. judgement			NEPA	
Chem. Contam./Nut.		CWA 303d			NEPA	
Habitat Access						
Physical Barriers*			personal obs.		NEPA	
Habitat Elements						
Substrate		prof. judgement			NEPA	
Large Woody Debris			prof. judgement		NEPA	
Pool Frequency		prof. judgement			NEPA	
Pool Quality		prof. judgement			NEPA	
Off-Channel Habitat*		prof. judgement			NEPA	
Refugia*		Deadman/ Dompier WA			NEPA	
Channel Cond. & Dyn						
Width/Depth Ratio		prof. judgement			NEPA	
Streambank Condition		Deadman/ Dompier WA			NEPA	
Floodplain Connectivity		prof. judgement			NEPA	
Flow/Hydrology						
Peak/ Base Flows*		Deadman/ Dompier WA			NEPA	
Drainage Network Incr.*			Deadman/ Dompier WA		NEPA	
Watershed Conditions						
Road Dens. & Location*			Deadman/ Dompier WA		NEPA	
Disturbance History*			Deadman/ Dompier WA		NEPA	
Riparian Reserves*			Deadman/ Dompier WA		NEPA	

* This indicator is evaluated at the entire 5th field watershed level and not at the index stream reach level.

C Judgement based on temperature and sediment data for the South Umpqua River provided in ODEQ 1998 303d report.

APPENDIX C

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order. These resources or values either **not present** or **would not be affected by the proposed actions or alternative** , unless otherwise described in this EA. This negative declaration is documented below by individuals who assisted in the preparation of this analysis.

ELEMENT	NOT PRESENT	NOT AFFECTED	IN TEXT	INITIALS	TITLE
Air Quality					
Areas of Critical Environmental Concern					
Cultural Resources					
Environmental Justice					
Farm Lands (prime or unique)					
Floodplains					
Non-Native and Invasive Species					
Native American Religious Concerns					
Threatened or Endangered Wildlife Species					
Threatened or Endangered Plant Species					
Wastes, Hazardous or Solid					
Water Quality Drinking/Ground					
Wetlands/Riparian Zones					
Wild & Scenic Rivers					
Wilderness					
Visual Resource Management					