CHAPTER 6 – RECOMMENDATIONS

OVERVIEW

This watershed analysis, conducted in accordance with the Record of Decision (ROD) for the Northwest Forest Plan, provides context and information to line officials to help guide their management decisions within the analysis area. Using the information within this analysis, a desired future condition of this watershed can be described and findings of consistency with the Aquatic Conservation Strategy can be supported.

There are multiple land allocations within the watershed as described in Chapter 1. Lands designated as Matrix are recognized as places where "most timber harvest and other silvicultural activities would be conducted" (ROD, C-39), but they also provide "connectivity between Late-Successional Reserves and provide for a variety of organisms associated with both late-successional and younger forests" (ROD, B-2). Late-Successional Reserves are designated for the protection, maintenance and enhancement of old-growth ecosystems (ROD, C-9). Riparian Reserves prohibit or regulate activities within in them that retard or prevent the attainment of the Aquatic Conservation Strategy (ROD, C-31). In order to "meet" the intent of the Aquatic Conservation Strategy (ACS), the ROD (B-10) directs land management agencies to conduct activities that "maintain the existing condition or lead to improved conditions in the long-term" or that move conditions "within the range of natural variability".

The overall goal for land management in this watershed is to move it towards the desired future condition of a healthy, productive forest that will provide the range of forest commodities described in this document on a long-term, sustainable basis.

Within the Matrix, the emphasis will be to provide a predictable and sustainable level of timber into the future using a scientifically sound and ecologically credible plan. In the LSR, the emphasis will be to maintain and enhance late-successional habitat through the use of silviculture, fuels reduction, and fire suppression where appropriate. In the Riparian Reserves, the emphasis will be to meet Aquatic Conservation Strategy objectives by maintaining and restoring riparian structures and functions through the use of silviculture, fuels reduction and fire suppression, where appropriate.

LANDSCAPE PLAN

Two basic components establish the foundation for the management goal of maintaining or improving ecological conditions as described above. The first component is to re-establish landscape patterns, which are associated with the local natural disturbance regime. The second component is to manage stand structure and species diversity to fit the potential of the land. If this is done, the watershed will contain a broad range of forest types, structures and patterns indicative of its fire regime. At the stand scale, forest management will be based on approximating small-scale disturbances, with consideration of the capacity of the land to produce wood fiber (site productivity). At the landscape-scale, the forest will maintain the same general balance of patterns and structures through time but individual stands will be changing continuously. This shifting mosaic of forest patterns and structures should maintain healthy, timber-producing stands, contribute to the diversity of plant communities and wildlife habitats, and maintain biodiversity across the landscape by providing the appropriate mix of habitats needed by indigenous fish, botanical and wildlife species.

Concepts similar to those in the Blue River and Augusta Creek management plans (Cissel et al. 1998 & 1999) were used in the development of this "landscape plan". In general, the Augusta Creek plan recommends that watersheds be managed at both the stand and landscape-scale, using information of the historical disturbance history and landscape patterns as a reference. This information is used for developing future management actions designed to move the forest landscape back toward the natural range of variability, while achieving social and economic objectives. In addition, the Northwest Forest Plan provides direction to restore habitat over broad landscapes based on natural disturbance processes (ROD, B-9).

Using the concept of landscape planning and the information assembled in this watershed analysis, the Middle North Umpqua watershed was divided into four ecologically different areas based on the disturbance regime, broad environmental gradients and forest types that were described in Chapter 3. It was felt that a combination of these mappings provided the best delineation of distinctly different areas (Table 19).

Further sub-division of these areas was conducted using existing land allocations and management areas in order to comply with current Forest Plan direction. This mapping resulted in delineation of what are called "Landscape Areas" (Fig. 60). Where possible, boundaries follow streams, ridgelines or roads.

Table 19. General landscape and stand characteristics of forests within the four ecological areas, which represent the desired future conditions.

LANDSCAPE AREA	ROTATION AGE (YEARS)	PATCH SIZE	STAND STRUCTURE	STAND STRUCTURE CHARACTERISTICS						MAX DENSITY INDEX*	BASAL AREA
				OVERSTORY		MIDSTORY		UNDERSTORY			
				Canopy Cover %	Trees Per Acre	Canopy Cover %	Trees Per Acre	Canopy Cover %	Trees Per Acre		
Gentle & Moist	300-350 w/550+yr remnants	Large	All-aged w/multi-stories	65-70	25-30	15-20	40-60	10-15	100-120	60%	200-280
Moderate	150-200 w/350 yr remnants	Med	All-aged w/few stories	70-75	35-50	10-15	40-60	10-15	80-120	50%	160-220
Steep & Dry	80-120 w/250 yr remnants	Small	Even-aged w/single story	75-90	50-80	0	0	10-25	15-30	45%	120-180
High Elevation	200-250 w/650+yr remnants	Med-Large	Even and all-aged w/few stories	60-70	60-80	10-15	20-40	15-25	100-150	60%	220-300

** A stand density index that indicates the stand's tree density in relationship to site occupancy. A stand with an index value of 35% is considered fully occupied with vigorous growing trees. At 60%, the stand begins to show signs of suppression mortality from competition between trees.*

Timber harvesting, silviculture and prescribed fire will be used as tools to achieve the desired conditions within Landscape Areas. In accordance with Forest Plan direction, timber harvesting will occur primarily in the Matrix Landscape Areas.

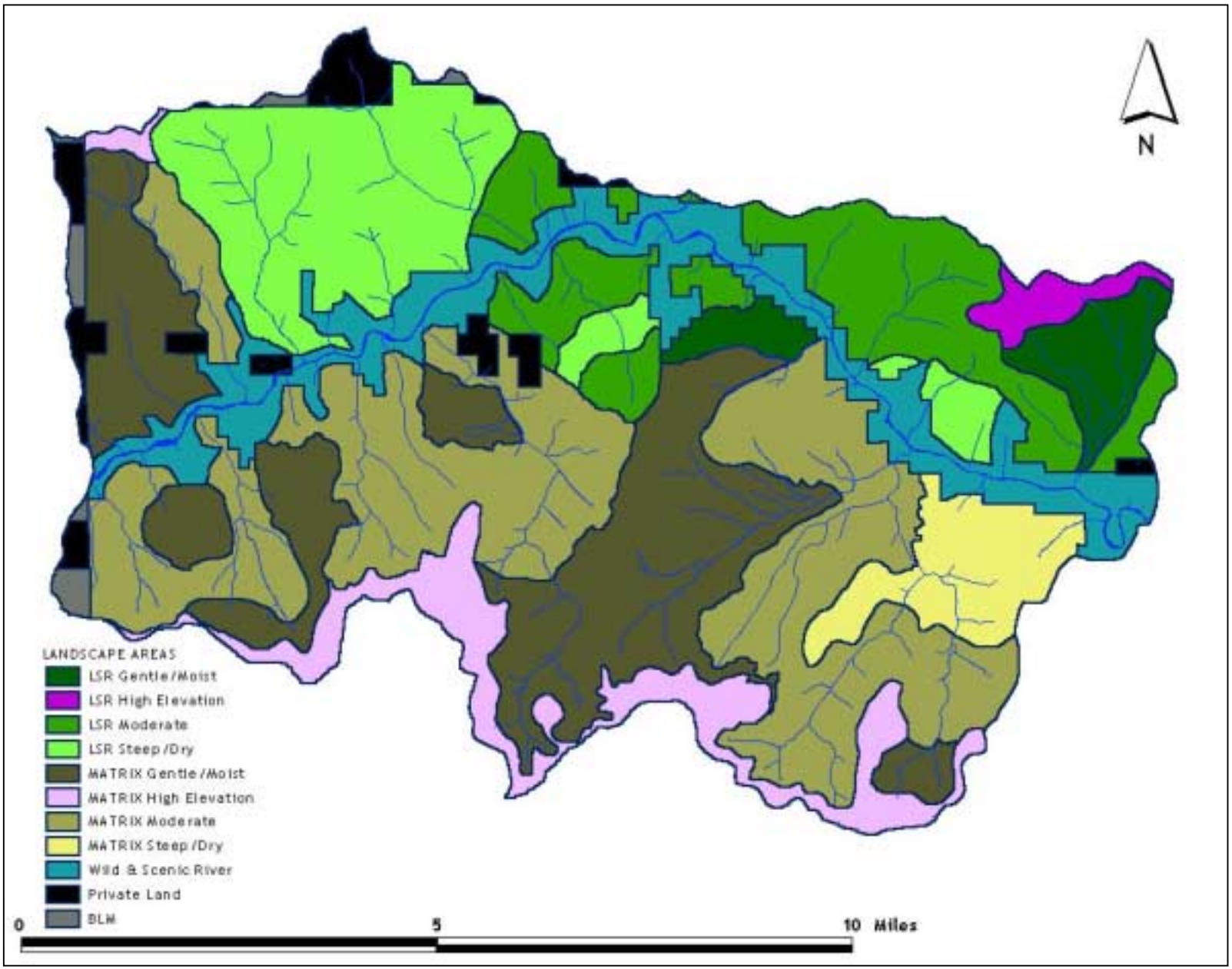

Figure 60. Landscape areas delineated within the analysis area.

TIMBER HARVESTING

In a recent speech to the American Forest and Paper Association (May 22, 2000), the Chief of the Forest Service stated that, "Our past approach [timber sale programs], based on timber quotas, no longer does the job. It leads to costly litigation and injunctions without necessarily improving the health of our forests. An alternative approach is to plan [timber sales] based on the desired future condition of our national forests". This strengthens direction for timber sales programs to be based on managing toward a desired future condition of healthy, productive watersheds and ecosystems. The landscape plan described above provides guidance for achieving this goal by restoring stand structure and landscape patterns, and pattern dynamics, back toward the natural range of variability.

High quality timber will be produced using silvicultural techniques and harvested through thinning, partial cuts and regeneration harvests (e.g., Fig. 61). Timber harvest and silvicultural activities will contribute to regional employment and maintain the desired balance of forest structures and landscape patterns.

Through the use of both uneven-aged and even-aged management, the forest should gradually move (over several decades) toward a desired range of landscape patterns and stand structures, which approximate the natural disturbance processes. Once attained, these patterns and structures can be maintained within their natural range, although individual stands will be constantly changing.

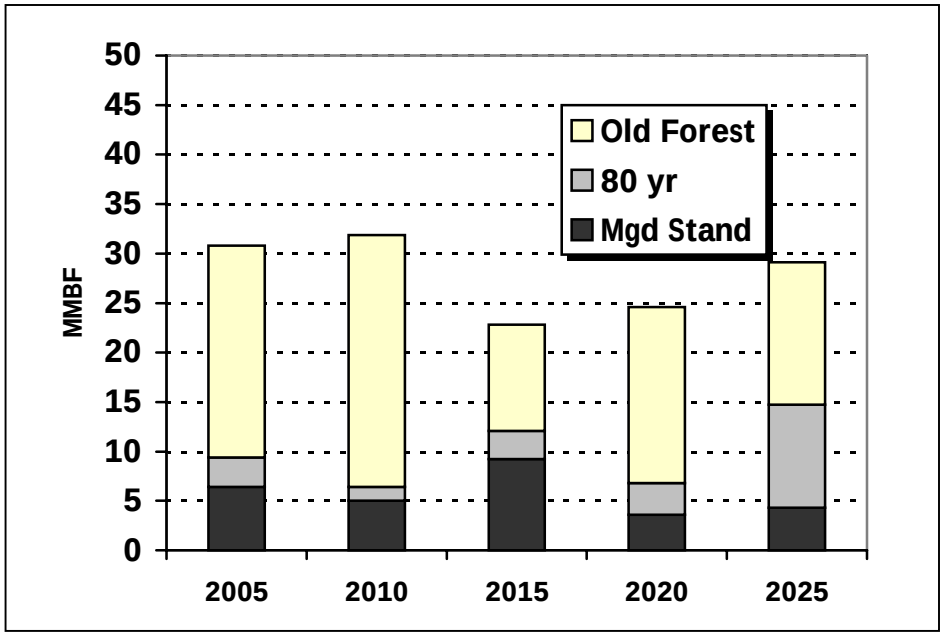

Figure 61. Predicted volumes from a hypothetical scenario of uneven-aged treatments within the analysis area over a 25-year period.

Landscape-based management should ultimately reduce the likelihood of having to manage for individual species or for individual sites. A diversity of stand structures across the landscape in varying amounts and arrangements should provide habitats for the broad spectrum of indigenous plants and wildlife (Carey 1995, Hansen 1995, Hunter 1990, Oliver 1992).

REASONS TO HARVEST

Timber harvesting can be used as a tool to achieve specific ecological objectives aimed at attaining the desired future condition for the watershed. In doing so, it can provide wood, jobs, and healthy forest ecosystems. Some ecological reasons to harvest timber discussed in this analysis include:

Restoring & Maintaining Stand Structure – In general, many of the stands within the analysis area have become over-stocked due to the exclusion of fire. The natural development of small gaps has been prevented, other than through the occasional occurrences of insects, disease and wind. Thinning and group selection timber harvest techniques can help restore stand structures to within the range of natural variability.

Restoring & Maintaining Landscape Patterns – In general, the landscape patterns (especially early and late-successional patterns) have become highly fragmented and patches are too small. This has produced adverse impacts to many late-successional species and prevents the normal function of many forest ecosystem processes. In addition, early-successional habitat within the watershed will begin to diminish as young stands reach the stem exclusion stage; it is important to maintain this type of habitat through time in appropriate amounts and places as determined through this watershed analysis. Big game is an important product of the watershed providing recreational opportunities to many. Openings will be created in areas with the highest density of big-game winter range. The use of regeneration harvest can be used to create early-successional stands over the watershed where appropriate. Managing the landscape in accordance with the natural disturbance regime should maintain appropriate numbers of big game.

Fuels Reduction - Late-successional forests in this watershed evolved and functioned within an active fire regime. Fire was a critical ecosystem process that maintained the health of the forest by controlling stand densities, modifying stand structures, recycling organic materials, providing organic and large wood inputs to the aquatic ecosystem and in the case of high-severity fires, creating early-successional habitat. Several decades of fire suppression have virtually eliminated this ecosystem process and allowed fuels to accumulate both on the forest floor and as ladder fuels in the understory. Today, many late-successional stands are at a higher risk of high-severity fire because of this fuel buildup. There are acute levels of fuel in certain portions of the landscape that are prone to fire, particularly in the old stands on the steeper/drier areas of the watershed. In these areas, harvesting could be used to reduce ladder fuels while maintaining fire resilient trees.

Pine Health – Within the watershed, it is evident that the pine component of the forest is rapidly decreasing. This has been attributed to the exclusion of fire, which has allowed over-stocked forest stands to out-compete the pine for resources. This weakens the pine tree's natural defenses to insects and disease. In order to maintain a healthy component of pine in the watershed, competition from surrounding trees should be reduced. Appropriate management techniques include harvesting trees within 40 feet of the bole of healthy pines. Knobcone pine should also be re-established along ridges in the watershed.

Insects and Disease - Disturbances caused by insects and disease often provide desirable structure and diversity to late-successional forest ecosystems. Where severe outbreaks occur, they should be dealt with through the IDT process. There are smaller scale and more regular opportunities to treat minor outbreaks of insects or areas affected by root rot. Planting populations of resistant species such as five-needle pines can treat areas affected by known laminated root rot pockets. However, if areas are planted to pine, a healthy pine component should be maintained by utilizing techniques described above in pine health. Opportunities also exist to leave susceptible populations of Douglas-fir near identified root pockets to purposely maintain these areas as open early seral areas for wildlife forage benefits. These areas could be utilized to passively maintain small group openings within an area.

LATE-SUCCESSIONAL STAND MANAGEMENT (RECOMMENDATIONS FOR MATRIX LANDS)

Due to the present imbalance of landscape patterns relative to the natural range of variability, employ harvest techniques that lower the impacts to late-successional forest habitats while producing forest products. This can be accomplished using even and uneven-aged management. See the silviculture appendix for details on using each management technique by landscape area.

Uneven-aged management is recommended for creating and maintaining stand structures similar to those that occur in late-successional forests. Frequent entries that retain high canopy closures will facilitate the maintenance of habitat, while producing a predictable supply of wood products (Table 20).

Even-aged management is recommended for use when a stand reaches the designated rotation age for the landscape area. It will also be used as a tool to create stand initiation forest structure similar to that created by fire. Smaller openings, similar to those created by high intensity fires, will be created, providing a variety of forest habitats and wood products (Table 21).

Table 20. General silvicultural information for use in developing uneven-aged management prescriptions. May be updated during project planning with site specific or new information.

LANDSCAPE AREA	HARVEST METHOD	RETENTION (%)	OPENINGS (ACRES)	STRUCTURE TO MAINTAIN		RE-ENRTY (YEARS)
				TREES	SNAGS & LOGS (see Table 22)	
Gentle/Moist	Single tree and group	60-70	0.5-5	≥45" DBH	Manage for overall stand averages IAW Moist Strata	20-30
Moderate	Single tree and group	70-80	0.5 - 3	≥40" DBH	Manage for overall stand averages IAW Moderate Strata	20-30
Steep/Dry	Single tree and group	40-70	0.5-2	≥35" DBH	Manage for overall stand averages IAW Dry Strata	20-30
High Elevation	Single tree and group	75-80	0.5-2	≥30" DBH	Manage for overall stand averages IAW Moist Strata	30-40
It is important to treat all stand layers for vigor and health during an entry. Levels of growing stock need to be reduced in each layer in order to share the finite growing space within the stand. Natural regeneration would be the main reforestation method. Retain stocking levels that are approximately ½ what they would be for the same age by species in an even-aged system. Precommercial thinning should be part of managing the understory whenever a commercial harvest occurs. Precommercial thin to a wide spacing. Monitor regeneration and sapling development at regular intervals.						

Table 21. General silvicultural information for use in developing even-aged management prescriptions. May be updated during project planning with site specific or new information.

LANDSCAPE AREA	HARVEST METHOD	RETENTION (%)	OPENINGS (ACRES)	STRUCTURE TO MAINTAIN		ROTATION (YEARS)
				TREES	SNAGS & LOGS	
Gentle/Moist	Regeneration Harvest	15-30	Large	≥45" DBH	Large diameter, high levels, well-distributed and clumped	300-350
Moderate	Regeneration Harvest	15	0.5 - 5	≥40" DBH	Large diameter, high levels, well-distributed and clumped	150-200
Steep/Dry	Regeneration Harvest	15	1-20	≥35" DBH	Small to large diameter, high levels, well-distributed	80-120
High Elevation	Regeneration Harvest	20-30	1-10	≥30" DBH	Large diameter, high levels, well-distributed and clumped	200-250
Harvest outside of Riparian Reserves and other buffers. Riparian Reserves can experience prescribed fire and some mortality is expected, but should not be harvested. Aggregate openings to mimic a fire event and avoid scattering openings across the landscape. Design areas for snag patches to be created through prescribed fire. Plant to supplement natural recruitment, consider planting wider and match native species diversity. Precommercial thin to a moderate spacing and thin before age 25. Consider fertilization in areas where aquatic conditions are not compromised. Utilize genetically improved planting stock where necessary. Prune for stand wood quality in Douglas-fir and prune to maintain health in pine by providing lifts up to 16 feet.						

Table 22. Forest inventory data from the Steamboat and Little River watersheds used to guide coarse woody debris management for uneven-aged treatments.

Diameter (inches)	Dry Strata		Moderate Strata		Moist Strata	
	FT/AC	SNAG/AC	FT/AC	SNAG/AC	FT/AC	SNAG/AC
6-9	216	2.4	224	3.4	348	2.8
10-19	175	2.1	252	1.8	322	1.9
20+	120	1.8	196	1.8	196	2.1

Even-aged management is best suited in the following five areas based on current landscape patterns and watershed conditions:

1) Fox/Thunder Creek area
2) Bachelor/Limpy Creek area
3) Burnt/Fall Creek area
4) Wright/John/Cougar Creek area
5) Panther Creek area

For uneven-aged management, partial harvest prescriptions will be planned across the Matrix over the next 25 years, with treatments occurring over a 3-5 year time period per subbasin. After a subbasin is treated, a "rest" period of approximately 20 years should occur. It is recognized that several cutting cycles may be necessary to develop the desired forest structure. The following Matrix areas are prioritized for uneven-aged harvesting based on current stand conditions and forest health problems (e.g., pine health):

1) Panther Creek area
2) Burnt/Fall Creek area
3) Fox/Thunder/Wright Creek area
4) Bachelor/Limpy Creek area
5) John/Cougar Creek area

In addition, the following recommendations apply:

- Thinning that occur between even-aged treatment rotations should encourage appropriate mixes of species and ages of trees.
- On dry and warm environments, variable spacing and less dense stands are desired while on moist and cool sites, even spacing and areas of higher tree densities are desired
- Use variable thinning spacing between rotations to accommodate complex vegetative needs, maintain full live crown ratios, and develop large branch sizes as well as thick bark that will promote resiliency to fire
- Release desirable hardwood and shrub components that exist in the stand
- Provide conditions to ensure success of natural regeneration of trees, shrubs and forbs; use artificial regeneration to supplement natural recruitment in areas that are regenerated. Consider planting using wide spacing and match native species diversity

- Refrain from harvesting late seral riparian stands; follow the interim buffer widths prescribed in the ROD (C-30 and C-31)

During project level planning, unsuitable soils should be analyzed to determine if uneven-aged management techniques could be applied without degrading soil productivity. For further details on how watersheds were prioritized, see the silviculture appendix.

MID-SUCCESSIONAL STAND DENSITY MANAGMENT (RECOMMENDATIONS FOR MATRIX & RESERVE LANDS)

More harvest in the mid-seral stands than in late-successional stands would maintain a balance of landscape patterns and allow more movement towards the natural range of variability. There are several thousands of acres within the analysis area that have been clearcut harvested and converted into plantations with dense stocking, simple structure and low species diversity. These stands, in all land allocations, require density management treatments now, and into the foreseeable future, to put them on a trajectory to achieve the desired stand structure as described in this analysis.

- Utilize variable spacing by species that prescribes different levels of retention between the riparian and the terrestrial environments
- Thin to various levels in managed stands in large landscape areas (esp. the LSR) by utilizing areas of spacing to include wide (approx. 50 tpa @ 30x30' spacing) spacing; moderate spacing (approx. 80 tpa @ 23x23' spacing) and narrow spacing (approx. 120 tpa @ 19x19' spacing)
- Consider fertilization in areas where aquatic conditions are not compromised
- Prune for wood quality in Douglas-fir and prune to maintain health in pine by providing lifts up to 16 feet
- Density management should be prioritized in plantations with greater than 275 trees per acre (tpa), which are dense enough to prohibit or slow the development of the forest
- Thinning should encourage a mix of species and ages of conifer and hardwood trees. On dry and warm environments, variable spacing and less dense stands are desired while on moist and cool sites, even spacing and areas of higher tree densities are prescribed
- In all landscape areas, slowly reduce stocking in areas of structurally unstable conifers (height/diameter ratios greater than 90)
- In all landscape areas, schedule work on higher site potential land first
- Where appropriate, in the riparian areas of managed stands, thin for compositional and size diversity, density reduction to accelerate large tree development, and interplant with native species including hardwoods

- In general, commercial thinning will occur every 20-30 years, where appropriate
- Use variable thinning spacing to accommodate complex vegetative needs, maintain full live crown ratios, and develop large branch sizes as well as thick bark that will promote resiliency to fire
- Release desirable hardwood and shrub components that exist in the stand
- Maintain and/or develop intermediate layer

PINE HEALTH (RECOMMENDATIONS FOR MATRIX & RESERVE LANDS)

Pine tree numbers are rapidly decreasing with the analysis area. This is primarily due to the exclusion of fire, which has allowed over-stocked forest stands and increased competition, resulting in weakening the pine tree's natural defenses to insect and disease. In order to maintain a healthy component of pines in the watershed, competition from surrounding trees should be reduced. Appropriate management techniques include:

- Where possible, use an "area specific" approach to restoring pine health in order to maximize efficiency
- Harvest trees (≤24" d.b.h. in LSR /≤30'' d.b.h. in Matrix) within 40' of the bole of healthy pines
- Consider even-aged strip cuts along identified ridges to re-establish knobcone pine
- Reintroduce fire into historic pine areas to control understory and intermediate layer stocking
- Take advantage of fire to restore knobcone pine along certain ridges
- Plant pine along identified decommissioned road segments in mapped pine areas
- Prune lower branches (up to 50% live crown) from infected pine under 6" dbh if prognosis is good for control of blister rust
- Plant resistant strains of both white and sugar pine within home ranges of pine distribution within younger stands with current open early seral vegetation
- Maintain a clear, 20-foot spacing around selected pine in older plantations and prescribe pruning treatments to accomplish lift to 16 feet in identified high hazard areas for blister rust. Stand basal areas around the pine should average less than 140 sq.ft. per acre for optimal pine maintenance
- Map all high hazard areas within the watershed so appropriate resistant planting stock can be used
- In the LSR and Riparian Reserves, it may be preferable to fell and leave or girdle trees and vegetation that are in competition with the pine in order to ensure viability of pine

Concentrate on sugar pine in the mapped pine locations; concentrate on ponderosa pine in the Panther Creek and Dog Mountain areas; concentrate on knobcone pine management on Mace Mountain and the Dog Mountain areas; and concentrate western white pine management in the high elevation areas around Lookout Mountain and Willow Flats.

SILVICULTURE

There are thousands of acres within the watershed that require pre-commercial thinning. Silviculture within the younger forested stands of the watershed will be used to accelerate and/or place developing stands on the preferred trajectory for the landscape area they occur within.

EARLY-SUCCESSIONAL STAND DENSITY MANAGEMENT (RECOMMENDATIONS FOR MATRIX & RESERVE LANDS)

- Utilize variable spacing by species that prescribes different levels of retention between the riparian and the terrestrial environments
- Interplant shade-tolerant conifers such as western redcedar and hardwoods such as Oregon ash in riparian areas
- In all landscape areas, interplant resistant stock in areas of root disease or blister rust; balance this treatment with the need to maintain open areas for early seral species
- Use variable thinning spacing to accommodate complex vegetative needs, maintain full live crown ratios, and develop large branch sizes as well as thick bark that will promote resiliency to fire
- Consider fertilization in areas where aquatic conditions are not compromised
- Prune for wood quality in Douglas-fir and prune to maintain health in pine by providing lifts up to 16 feet
- Restore compacted soils on sites within refugia habitat to augment water infiltration where current and past harvest has altered soil conditions on over 40% of the site
- Density management should be prioritized in plantations with greater than 275 trees per acre (tpa), which are dense enough to prohibit or slow the development of the forest
- Pre-commercial thinning should occur on stands clearcut since 1985, of which, there is a current backlog. Work first in the youngest stands to retain the highest amounts of compositional and structural diversity through the use of uneven spacing or spacing by species
- Thinning should encourage a mix of species and ages of conifer and hardwood trees. On dry and warm environments, variable spacing and less dense stands are desired while on moist and cool sites, even spacing and areas of higher tree densities are prescribed

- Thin to various levels in managed stands in large landscape areas by utilizing areas of spacing to include wide (approx. 50 tpa @ 30x30' spacing) spacing; moderate spacing (approx. 80 tpa @ 23x23' spacing) and narrow spacing (approx. 120 tpa @ 19x19' spacing)
- In all landscape areas, slowly reduce stocking in areas of structurally unstable conifers (height/diameter ratios greater than 90)
- In all landscape areas, schedule work on higher site potential land first
- Release desirable hardwood and shrub components that exist in the stand

LOGGING SYSTEMS AND ROADS

A map of the highest priority roads needed for timber harvest was generated by field review of all locations within the watershed. This information will be used to conduct a Roads Analysis for the watershed. Based on current technology and economics, this road system would be necessary to conduct forest timber management as recommended over the next 25 years. Logging systems analyzed included conventional skyline yarding, long-span yarding, helicopter logging and ground skidding (Figure 62). Helicopter logging was designated in areas where conventional roadwork is unfeasible or to provide protection for identified habitats. Long-span yarding was identified where sufficient acreage and future volume would exist underneath the designated cable roads. Additional information on the economics of logging and the criteria used to delineate road segments is contained in a separate report in the Silviculture appendix. For logging systems, the recommendations are:

- On average, if road building costs are greater than $150/MBF, consider using helicopters
- With tractor yarding, utilize as many of the pre-existing old skid roads as possible, decommission roads not needed
- Construct and maintain helicopter landing areas, including approaches and fueling stations; These can also be used as helispots for fire suppression
- Explore opportunities for other harvest systems like the balloon-spiders, cut-to length, mechanized harvesters, or walking-type yarders
- Where ground skidding is recommended, designate the use of old skid trails where possible. In areas of previous compaction from past logging entries, decompact soils and restore vegetation following logging

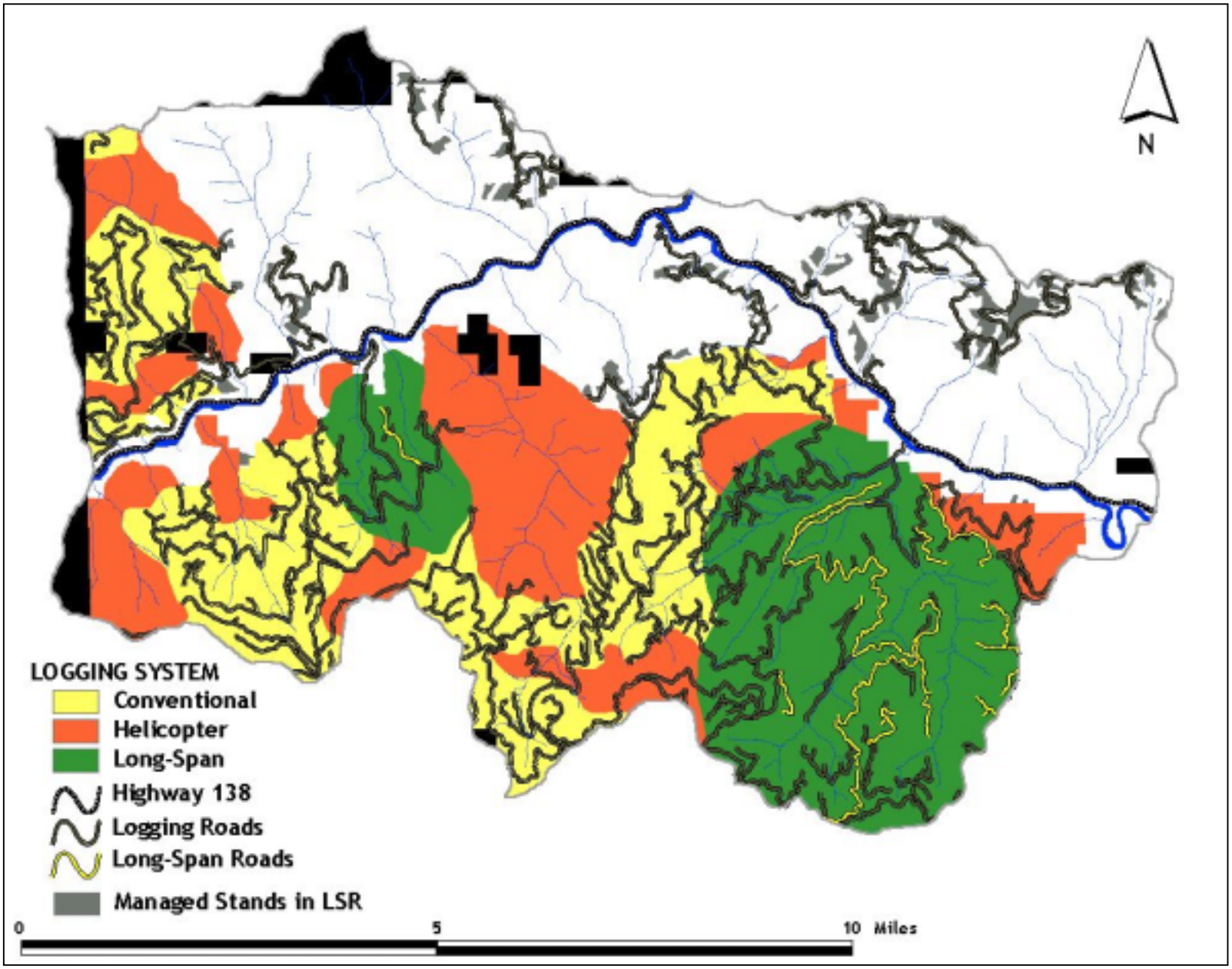

Figure 62. Road system required to support logging systems within the analysis area into the foreseeable future.

FIRE AND FUELS MANAGEMENT

Recent events have led to a focus on the use of prescribed fire, fuels reduction activities and fire suppression on public lands across the nation (National Fire Plan). As described in this document, several decades of fire suppression, road construction and timber management have led to higher fuel accumulations and fire risks across the analysis area. Many forests across the region (and nation) are currently re-evaluating and revising their Forest and Fire Plans. This has not yet occurred on the Umpqua National Forest. In fact, no Fire Plan currently exists for the Forest. In lieu of a Fire Plan, this analysis provides recommendations to manage fuels and fire within the existing management framework.

FUELS REDUCTION

Late seral and mature forest vegetative cover reflects disturbance from past fire events and also reflects the accumulations of fuels since fire suppression began. There are acute levels of fuel in certain portions of the landscape that are prone to fire, particularly in the oldest stands and along the ridges. Many of the late seral and mature stands in the drier land areas will tend towards having an even-aged structure and appearance. Stands in moist areas will typically develop more complex structure and tend to be all-aged where one age class does not dominate. The following recommendations apply:

- Utilize prescribed fire and mechanical treatment on a landscape scale in areas identified as late seral prone to fire and high fire risk (Fig. 62)
- For late seral stands prone to fire, consider establishing a plan for periodic maintenance burns to keep fuels from re-accumulating to unnaturally high levels. Where logistically appropriate, include late seral stands that support fuel model 8 but are in a high fire frequency area
- Prescribed fire will be considered to reduce fuel levels so future fires will be expected to be less likely to open up large areas of potential seed beds for non-native species
- Use of prescribed fire in unique habitat should be considered as long as mitigation against increasing noxious weeds can be effective
- Reduce fuels around rural/resident/forest interfaces

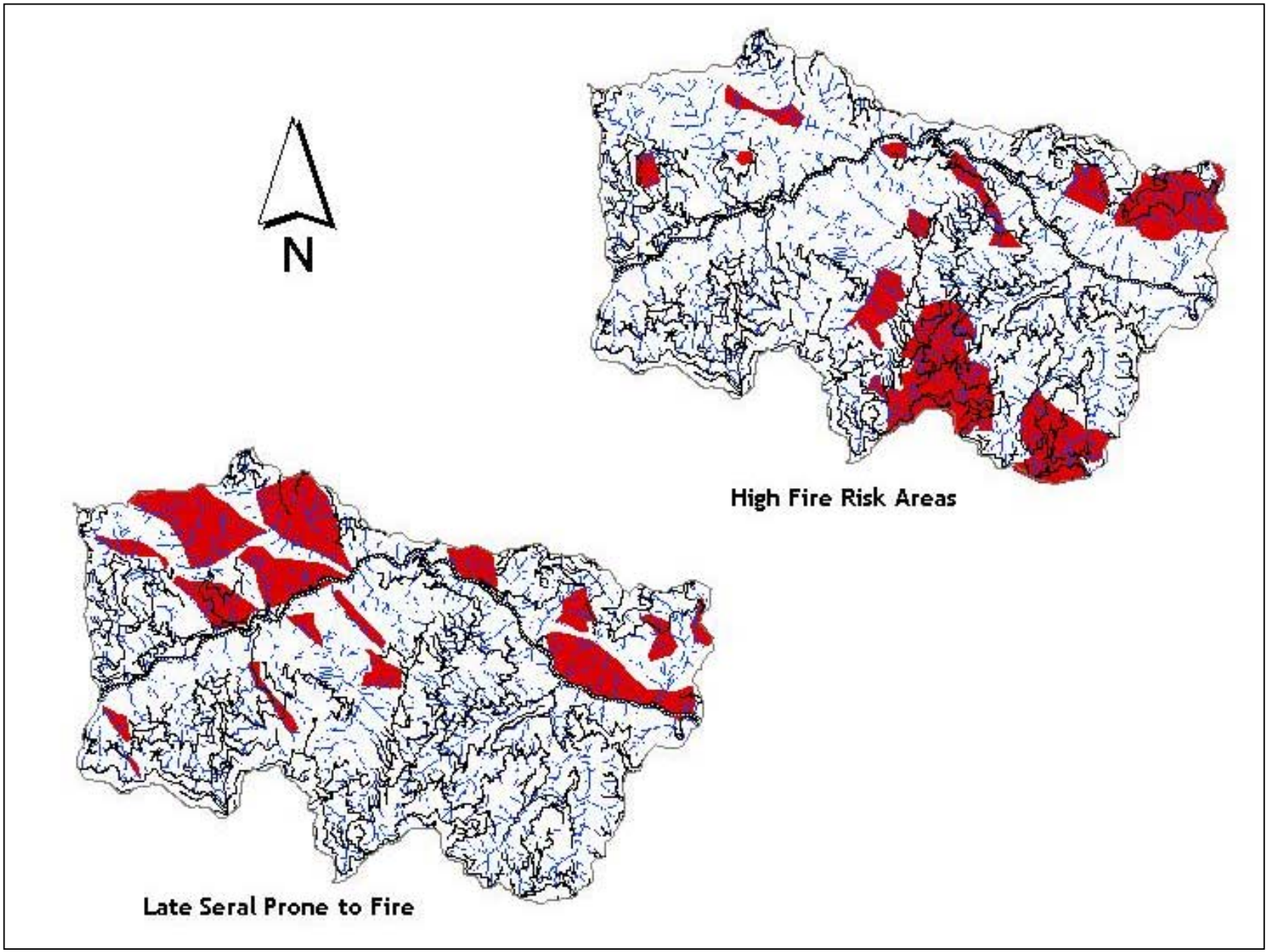

Figure 63. Potential fuel treatment areas within the analysis area.

FIRE SUPPRESSION

Wildfire suppression strategies should recognize the role of fire in the ecosystem and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function. However, for the next few years, fire will likely continue to be aggressively suppressed to avoid loss of timber producing lands and late-successional forests. Important components of suppression strategies will be to:

- Limit the wildfire size and continue to minimize impact of suppression tactics to riparian reserves, according to the Aquatics Conservation Strategy Fire/Fuels Management Standards and Guidelines
- Design suppression strategies, practices and activities to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in the ecosystem and identify instances where suppression activities could cause more damage than the fire itself
- Locate incident bases, fire camps, helibases, staging areas, and other facilities outside of Riparian Reserves
- Develop mechanized equipment guidelines for the late-successional reserve. This would involve mapping sensitive areas such as steep ground, high geohazard areas, and riparian reserves. Include alternative line construction methods in these guidelines (such as blasting)
- Include 1/8" mesh for pump intakes, absorbent kits, and spill containment materials in district pump kits and initial attack engines
- Identify least toxic water additives for utilization and minimize delivery of chemical retardants to surface waters. An exception would be situations where overriding and immediate human life safety concerns exist
- Design appropriate roads and facilities to support fire suppression activities (e.g. helispots, sumps)
- Include a qualified Resource Advisor as a position filled during initial attack in the district lightning organization. This person should be familiar with the area, its resource values, and have a thorough knowledge of the standards and guidelines of the Northwest Forest Plan

Regardless of whether fire activities are undertaken for wildfire suppression, wildfire hazard reduction, or for prescribed fire applications, it is critical that the safety of firefighting personnel and the public are not compromised.

REVEGETATION

Native plants should be used for revegetation efforts where practical and available. Currently, several species are being cultured for revegetation efforts on the District (Blue wild rye, red fescue, western fescue and needlegrass). See

the botany appendix for further information on species used for revegetation. Currently, revegetation projects focus on controlling erosion, providing forage for big game, and precluding the establishment of noxious weeds. Future efforts to improve the amount of native plants available will focus on creation of seed mixes that include legumes, shrubs, and grasses. Use of seed mixes is more practical and economical, especially for erosion control and big game forage. Small site-specific projects may continue transplanting plants or use of potted materials. In general, seeding should be done with natives when possible, with the highest priority given to using native plants in the Late-Successional Reserve. When not practical, seeding may be done with a non-aggressive non-native mix (see Botany Appendix). Continuation of the native plant production efforts is contingent on future funding.

UNIQUE HABITATS

Few Unique Habitat areas have been surveyed for management species, accuracy of boundaries or management needs. Areas that have been surveyed were done during project level work. A thorough inventory is needed. The desired future condition for unique habitats would allow fire to occur as a natural event. Roads that intersect or influence unique habitats would be eliminated or the impacts lessened. Noxious weed infestations would be identified and controlled. Rehabilitation of disturbance caused by fire fighting activities during wildfire events would be actively pursued. Table 23 lists recommended activities specific to the different types of habitat that would help achieve the desired future condition for unique habitats.

Table 23. Habitat Specific Management needs.

HABITAT TYPE	RECOMMENDATIONS TO ACHIEVE DESIRED FUTURE CONDITION
Rock	Quarantine Noxious populations, rehab sites used as camps or safety zones during wildfire suppression
Dry Meadow	Reestablish fire as ecological component, identify sites were native grasses can be enhanced and manage accordingly
Broken Canopy	Reestablish fire as ecological component
Hardwood	Reestablish fire as ecological component, determine desired patterns of seral progression
Wet meadow	Reestablish and protect hydrological function
Pond	Protect hydrological function

LIMPY RNA

The establishment report (1979) for the Limpy RNA cited the area as "outstanding for its unusual richness in special interest species and the abundance of their populations." The report further states the site will "function as a research site for studies of the dry Douglas-fir forest ecosystems."

Two species included on the Regional Forester's Sensitive list exist within the RNA. Umpqua Kalmiopsis and grass-fern are known to inhabit rocky outcrops. Occasional checks of one grass fern site indicate at least a periodic die off. Kalmiopsis is known to prefer open sites. A light to medium fire stimulates vigor in this plant. This is demonstrated in plants that burned during the Spring Fire (1996). Decreased vigor has been noted at sites that have had fire excluded and plants are becoming increasingly shaded. Long-term exclusion of fire will have detrimental effects on populations.

The desired future condition for the RNA is to maintain the natural conditions of the area for scientific study and education. Most especially, it should "function as a site for preservation and concentrated scientific study of special interest plants" (Establishment Report 1979). The following recommendations apply to the RNA:

- Encourage continued learning and research of the area's moss, liverwort, lichen and fungi flora
- Monitor recreational use in the RNA in order to determine if adverse affects are occurring to the values for which the RNA was established. Limpy Rock and the riparian zone along Dog Creek in particular show signs of use
- Update and post the RNA boundary based on 1993 recommendations from Forest Service personnel, as funding allows
- Locate and map all Kalmiopsis sites and gather population data, develop a management strategy for the species
- Monitor the condition of grass fern

LANDS, FACILITIES, AND RECREATION

RESIDENCES

It is assumed that the privately owned residences that are currently held within the analysis area will be maintained into the future. In order to protect landowner rights and Forest Service interests, it would be desirable for each

landowner to have a legal easement to their property. Where they exist, easements should be kept current and ownership updated if/when it changes.

PRIVATE TIMBERLANDS

It is assumed that private timber companies will maintain their timberlands on a 40-60 year harvest rotation. Road use permits will continue to be requested and granted on a case-by-case basis, after undergoing any National Environmental Policy Act (NEPA) and/or Endangered Species Act consultation requirements.

ROADLESS AREAS

In November of 2000, the Forest Service released a Final Environmental Impact Statement that proposes to prohibit new road construction, reconstruction or timber harvest activities in the unroaded portions of inventoried roadless areas on National Forest System lands. In addition, when revising Forest Plans, local land managers would be required to: evaluate the quality and importance of roadless characteristics; and determine whether and how to protect roadless characteristics in the context of multiple use objectives.

LANDS

In order to further enhance the roadless area values of the Cougar Bluffs Roadless Area, the two parcels that are held within the Cougar Bluffs Roadless Area could potentially be candidates for purchase or trade. Both parcels have potential value as heritage/cultural resource sites.

Pursue options to purchase these parcels in cooperation with the current landowners. One such option would be to request funding through the Land and Water Conservation Fund. This fund provides monies to federal, state and local governments to acquire land, water and conservation easements for the benefit of all Americans. Each year it gives the authorization to provide up to $900 million to purchase lands and waters for the public's benefit for:

- Recreation
- Scenic landscapes
- Wildlife habitat
- Clean water
- Quality of life

Lands are purchased from willing sellers at fair-market value or through partial or outright donations of property. Landowners can also sell or donate easements on their property that restrict commercial development while keeping the land in private ownership. The funding for these purchases comes primarily from revenues received from offshore oil and gas drilling.

OTHER USES

It is anticipated that other special uses of the forest will continue, including telephone, powerline, and other facility development. These activities will be analyzed at the project level through the NEPA process.

ROAD SYSTEM

- Conduct a road analysis using the information provided by this watershed analysis and the ongoing stream crossing inventory
- Design a future road system that provides for appropriate human uses, including timber harvesting, fire suppression and recreation while minimizing adverse effects to the ecosystem
- As existing road miles continue to exceed road maintenance budget capabilities, maintain an opportunistic approach to reducing road miles in the event of extreme storms that cause road damage
- In the event of large-scale blowdown, assess the opportunity and need to stockpile down logs along the roadside for use during future instream projects
- As discussed in the Limpy Rock RNA plan, refrain from building additional roads in the RNA

RECREATION/MINING

- Recreational activities which modify the natural character of the Limpy RNA should be discouraged or prohibited
- Maintain existing trails and shelters and continue allowing use of the eight concentrated use areas (CUAs) outside of the river corridor. See the North Umpqua River Analysis (2000) for recommendations on recreational sites within the river corridor (scheduled for completion in February 2001)
- When we are aware of the occurrence of recreational mining, consider monitoring for turbidity within 300 feet downstream and to determine if adverse effects are occurring

WATERSHED RESTORATION

This watershed has lower priority for restoration under current forest strategies. When practical, consider using timber harvesting to provide funding for restoration activities. In this watershed, Fairy Creek has received the most restoration attention. Between 1993 and 1995, large wood was placed in the lower reaches of the channel and trees were planted within the riparian area. Some roads were also decommissioned or reconstructed. In order to effectively monitor the results of this project, timber harvest activities should be deferred. Restoration activities should focus on the following:

- Defer timber harvest in the 2,055 acre Fairy Creek drainage until 2010. Conduct monitoring and surveys in 2002 and 2008 in order to assess the effectiveness of the large wood placement project that occurred in 1995, if funding allows.
- Re-establish aquatic and riparian connectivity by using appropriately-sized culverts or by placing natural-bottom culverts
- Focus on restoring upland areas prior to undertaking instream projects
- Restore forest health (stand and landscape) through pre-commercial and commercial thinning, timber harvest, and use of prescribed fire
- Reduce road densities
- Design soil treatments to reduce effects from compaction in key areas within harvested plantations
- Restore compacted soils on sites within refugia habitat to augment water infiltration where current and past harvest has altered soil conditions on over 40% of the site
- Reduce non-native vegetation
- Where possible, concentrate activities by 6th field subwatershed
- Place large wood (greater than 24 inches in diameter and greater than 50 feet long) into the tributary streams of the North Umpqua. Use the project level planning process to determine stream reaches to treat;
- Prescribe thinning activities in previously harvested stands adjacent to fish bearing streams in order to accelerate development of large trees for stream shading and coarse wood. Coordinate with road decommissioning if possible. Use the project level planning process to determine stream reaches to thin
- Restore vegetative diversity in previously harvested streamside forests along larger, fish bearing channels
- Interplant shade tolerant conifers and hardwoods in riparian areas to represent the native species mix in riparian stands that were previously harvested
- Reintroduce fire into late seral Riparian Reserves, especially in the steep/dry landscape areas