

# Chapter 4

## Forest Management Direction

### Section 1

#### Forest Management Goals, Objectives, and Desired Future Condition

Goals are generalized statements that provide broad direction for future management of the Forest. The primary goal of the Ochoco National Forest is to manage under the principles of “Caring for the Land and Serving People.” Multiple use and sustained-yield management of all forest resources are an integral part of these principles. Specific resource goals are in support of these principles and are presented in this chapter.

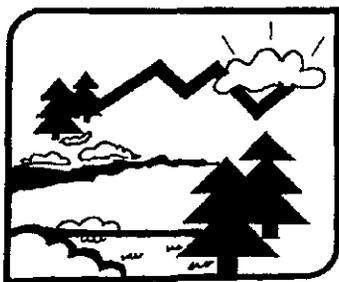
Objectives represent projected, potential outputs in support of overall goals. They are based on available inventory data and assumptions, subject to annual budgets. Objectives for key forest resources are displayed as average annual outputs, or totals per decade for the next five decades. They do not infer a commitment on the part of the agency to supply the appropriate resource on a regular basis, but do state the maximum output available, subject to the broad discretion of the Forest Service.

Desired future conditions summarize the anticipated physical changes that are likely to occur as a result of carrying out planned management practices over time. These descriptions are provided at ten years, and fifty years and beyond, for the Forest.

The information presented in this section provides goals, objectives, and desired future conditions for each of the key Forest resources. Resources are presented in alphabetical order. They are:

AIR QUALITY  
BIOLOGICAL DIVERSITY  
CULTURAL RESOURCES  
FACILITIES  
FIRE  
FORAGE AND LIVESTOCK USE  
FOREST HEALTH  
FOREST RESIDUES  
FUELWOOD  
LANDS  
MINERALS AND ENERGY  
OLD GROWTH  
RECREATION  
SCENIC RESOURCES  
SOCIAL AND ECONOMIC  
SOIL  
TIMBER  
TRANSPORTATION SYSTEM  
WATER  
WILDLIFE AND FISH

## Air Quality



### Goal(s)

Maintain air quality at a level adequate for the protection and use of the Ochoco National Forest resources, and which meets or exceeds applicable Federal and State standards and regulations (Clean Air Act, as amended, and Oregon State Implementation Plan for Protection of Visibility in Class I Areas).

### Objectives

Use the best available technology and management techniques to minimize smoke production from prescribed burning activities. Table 4-1 shows the estimate of total suspended particulates (TSP) generated in smoke from both natural and activity residue treatments.

**Table 4-1**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
TSP Generation by Prescribed Fire	M Tons/Yr.	13.2	12.7	11.5	7.4	9.9

## Desired Future Condition

### In Ten Years

Smoke emissions are projected to decrease over time, as shown in Table 4-1. This will result in a similar percentage decrease in visibility impairment (see Fire, Prescribed Burning Objectives, this section).

### Fifty Years and Beyond

Emissions will decline to stable levels by the fifth decade: about 7 to 10 thousand tons per year. Improvement in visibility over the long run is primarily the result of the timber harvest schedule and an anticipated 20-40 percent reduction in the amount of excess residues in the managed stand condition.

## Biological Diversity



### Goal(s)

Maintain native, historic, and desirable introduced plant and animal species and communities, including those that may be threatened, endangered, or sensitive.

Maintain or enhance ecosystem functions to provide long-term productivity of forest resources and biological communities.

### Objectives

Provide for all seral stages of terrestrial and aquatic plant associations existing and/or desirable for the Forest, with a distribution that is ecologically sound and ensures continued reproduction of the specie(s). For the Ochoco National Forest, the following diversity elements (Table 4-2) serve as objectives for defining biological diversity for both plants and animals. Values are displayed as totals, rather than average annual outputs.

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Table 4-2

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Riparian Areas in Excellent Condition <sup>1/</sup>	M Acres	10.0	11.2	12.7	15.1	17.5
Riparian Areas Designated For Connective Habitat	M Acres	1.0	1.0	1.0	1.0	1.0
Snag Habitat for Cavity Nesters (Average Across the Forest)	Percent of Potential	47	49	51	55	54
Old Growth (Allocated plus Unallocated)	M Acres	93.8	83.9	74.2	64.5	55.1
Acres of forested land by Successional Stage <sup>2/</sup>						
Stage I and II	M Acres	9	30	26	37	34
Stage III	M Acres	151	151	30	56	63
Stage IV	M Acres	184	192	333	160	190
Stage V	M Acres	134	115	109	255	230
Stage VI	M Acres	94	84	74	64	55
Acres of nonforest land by Plant Community Type						
Timberline Meadows	M Acres	3	3	3	3	3
Meadows	M Acres	9	9	9	9	9
Juniper Dominant	M Acres	57	57	57	57	57
Grass Dominant	M Acres	5	5	5	5	5
Sagebrush Dominant	M Acres	38	38	38	38	38
Biscuit Root-Scabland	M Acres	7	7	7	7	7

<sup>1/</sup> See WATER Objectives, this section

<sup>2/</sup> Stage I=Grass-forb

Stage II=Shrub-seedling (0-10 years)

Stage III=Pole-sapling (11-39 years)

Stage IV=Young (40-79 years)

Stage V=Mature (80-159 years)

Stage VI=Old Growth (160 + years)

## Desired Future Condition

### In Ten Years

Forest-wide, biological diversity of plant and animal communities and species will be different in ten years.

Riparian areas, which serve as critical habitat for more than 75 percent of the Forest's wildlife species, will be improved over today's conditions, as a result of specific management actions. Connective habitat, of which riparian areas are a major factor, will be available in varying degrees across the Forest to provide linkage or extensions between forested habitats for wildlife species. Some riparian areas have been purposely widened in identified areas to accommodate movement of old growth dependent species (pileated woodpecker) between primary reproductive habitats (see Section 3, Management Area Standards and Guidelines for Wildlife and Fish).

Snag habitat for cavity nesters will be at about 47 percent of potential, but will be more evenly distributed as areas currently deficient in snags are improved due to natural mortality, or created through management action.

About 94 thousand acres of old growth will exist across the Forest, with large contiguous acreages concentrated mostly in wilderness, roadless areas and Research Natural Areas. Old growth specifically allocated for dependent wildlife species (along with equal acreages of supplemental feeding habitat) will exist in a somewhat evenly distributed pattern across the remainder of the Forest in order to ensure viable populations. In addition, other old growth will exist in areas allocated for various levels of vegetative manipulation (i.e. General Forest and other management areas), but will be declining over time.

Out of a total of 572 thousand acres of forested vegetation, all successional stages are expected to be present, though they will not necessarily be evenly distributed geographically. Pole/sapling, young stands, and mature stands (Stages III-V, respectively) will comprise the largest acreage, especially across intensively managed areas of the Forest. These will be represented both vertically (*uneven-aged stands*) and horizontally (*even-aged stands*). Grass/forb and shrub/seedling stages will be increasing, primarily in mixed conifer stands, as even-aged management is implemented. Old growth (Stage VI) will be decreased, both in total acreage as well as overall distribution.

In non-forest plant communities, species dominance may change as a result of forage enhancement for wildlife and livestock, and juniper thinning or removal for watershed improvement. No planned management practices are intensive to the point that they will actually result in a change from one plant community to another for non-forest vegetation types.

Even though not specifically stated as an objective above, habitat for existing threatened, endangered, and sensitive species of plants and animals will be available as needs are identified over time. Current conditions include habitat for bald eagles, as stated in specific management area prescriptions (see Section 2,

Management Area Prescriptions for Eagle Roosting Areas; also see Threatened, Endangered, and Sensitive Plants and Animals List, Appendix C).

### Fifty Years and Beyond

Forest-wide, biological diversity of plant and animal communities and species will be substantially different.

Most of the riparian areas on the Forest will be in “excellent condition” as a result of specific management actions. Connective habitat will be available in varying degrees across the Forest in order to provide linkage or extensions between forested habitats for wildlife species, but may not be as effective as today, because most timber stands in these areas will have been placed under some level of management.

Snag habitat for cavity nesters will be at about 54 percent of potential, and as evenly distributed as possible. No areas of the Forest (other than those managed for safety concerns, i.e. administrative areas) will be below 40 percent of potential.

About 55 thousand acres of old growth will exist across the Forest, but will be concentrated mostly in wilderness, roadless areas and Research Natural Areas. In order to ensure viable populations, old growth specifically allocated for dependent wildlife species (along with equal acreages of supplemental feeding habitat) will still exist in a somewhat evenly distributed pattern across the remainder of the Forest. Very little old growth will exist in areas allocated for various levels of vegetation manipulation (i.e. General Forest and other management areas), as most of these areas will have been treated.

On forested land, all successional stages should be present, though they will not necessarily be evenly distributed geographically. Young and mature stands (Stages IV & V) will comprise the largest acreage, especially across intensively managed areas of the Forest. These will be represented both vertically (uneven-aged stands) and horizontally (even-aged stands). Grass/forb and shrub/seedling stages (Stages I & II) will be approaching an acreage indicative of a fully managed forest condition, meaning that similar acreages will be represented indefinitely. Old growth (Stage VI) will be about 55 thousand acres, and most will be concentrated in wilderness, roadless areas and Research Natural Areas. The remaining acreages will be in somewhat isolated stands reserved for dependent wildlife species across the Forest, with a small acreage still available in General Forest and other management areas.

No significant change in acre distribution of non-forest plant communities is projected at this time.

Habitat for threatened, endangered, and sensitive plant and animal species will be available as needs are identified in accordance with Federal Law.

# Cultural Resources



## Goal(s)

Locate, evaluate, protect, and mitigate if necessary, significant historic and archaeological sites. Enhance and interpret selected sites for public enjoyment, education and interpretation after public involvement with American Indian Tribes, historical societies, and local interest and professional groups. Promote opportunities for research, and traditional Native American cultural practices, writing, and photography.

## Objectives

Complete “broad-area” cultural resource inventories and documentation prior to ground-disturbing activities on the Forest (see standards and guidelines, Section 3, this chapter). Identify Native American traditional food and religious use areas, in compliance with Public Law 95-341 (American Indian Religious Freedom Act) and the Treaty of 1855, with the assistance of the Warm Springs Confederated Tribes and the Burns Paiute Tribe.

Numbers shown in Table 4-3 represent estimates of site documentation, site enhancement or interpretation, and nominations to the National Historic Register for future decades, based on past experience.

**Table 4-3**

Resource/Activity	Unit of Measure (Average)	Decade				
		1st	2nd	3rd	4th	5th
Sites Documented	Number/Yr.	120	100	80	70	60
Sites Enhanced/Interp.	Number/Yr.	3	3	3	2	2
Nat'l Register Nomination	Num/Decade	2	2	2	2	2

## Desired Future Condition

### In Ten Years

In ten years, 60-70 percent of the Forest will have been surveyed for cultural resources. As the demand for timber harvest and other resources in previously avoided areas increases, many significant cultural resource sites will be mitigated. This will benefit the public as well as the academic community by increasing the body of knowledge about the prehistory and history of the Forest. Accurate, meaningful interpretation of a greater number of sites will result. Similarly, greater knowledge will enable the Forest to more efficiently manage the resource.

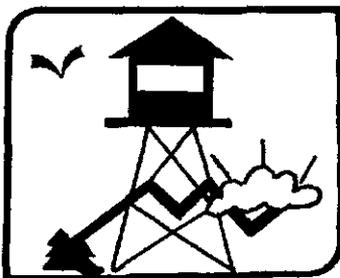
Management plans and allocations for site and thematic site classes may have been recognized, through amendment of the Forest Plan and involvement with appropriate individuals, groups and public agencies. Traditional Native American use of sites and areas will be recognized and considered during land and resource management activities. Site enhancement and interpretation will have been performed on specific sites and thematic classes. Stabilization of threatened cultural resource sites will have been performed within or adjacent to existing public recreation and use areas.

### Fifty Years and Beyond

The accumulated knowledge of historic, cultural and prehistoric site types and implementation of management plans and allocation strategies for cultural resources will reduce the need to inventory certain portions of the Forest. Information on the prehistoric, historic, and Native American cultural use of the Forest will have increased to a level that management of the resource will be efficient and precise. Advances in archaeological methods, historic research, sampling site stabilization and thematic evaluation will affect changes in management and result in more accurate interpretation of the resource. A large body of protected sites and data from mitigation projects will provide the basis for ongoing interpretive programs and facilities.

Enhancement and interpretation will begin to dominate the cultural resource program. Local citizens, groups and professional organizations will be involved in site preservation and interpretation. Native Americans will make greater use of the Forest for traditional food gathering and religious practices; they will be involved in the management and treatment of prehistoric sites and burials, and the Forest in general.

## Facilities



### Goal(s)

Plan, construct, maintain, and manage Forest facilities to provide maximum economy, investment protection, user safety, and resource protection.

### Objectives

Facilities relate to administrative sites located across the Forest. These include ranger stations, campground facilities, work centers, lookouts and electronic sites. Future facilities construction or improvements are provided as totals (first decade only), instead of average annual outputs. See Table 4-4.

**Table 4-4**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Construction and Improvements (Reconstruct)	Number	27	N/A	N/A	N/A	N/A

## Desired Future Condition

### In Ten Years

Forest facilities will be attractive to users and reflect favorably on the Forest Service. Marginal facilities will have been removed or upgraded based on need and planned life expectancy.

### Fifty Years and Beyond

No drastic changes in location or design of Forest facilities are predicted, even though some changes may occur as a result of an aging population.

## Fire



### Goal(s)

Control wildfire aggressively (particularly in urban-Forest interface areas), and in a cost-effective manner (minimize suppression cost plus loss).

Provide for the ecologically sound use of prescribed fire as a cost-effective management tool for achieving resource management objectives.

### Objectives

#### Wildfire Management

Provide a cost-efficient fire management organization as determined by the National Fire management Analysis System. The Wildfire Effectiveness Index figures shown in Table 4-5 represent average annual program cost plus wildfire loss per thousand acres protected.

**Table 4-5**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Wildfire Effectiveness Index	\$/1000 ac protected	715	715	715	715	715

### Prescribed Burning

Reduce wildfire intensities to support a cost-efficient fire protection organization.

Emulate the natural role of fire in maintaining environmental diversity and site productivity. Maintain or improve wildlife and range habitat.

Table 4-6 provides estimates of average prescribed fire acres. It is anticipated that there may be large variations above and below these averages in any one year due to variations in available burning conditions, funding, personnel, and timber harvest schedule.

**Table 4-6**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Prescribed Burning Natural & Activity Fuels	M Acres/Yr	24.6	25.2	24.9	19.7	25.6

## Desired Future Condition

### In Ten Years

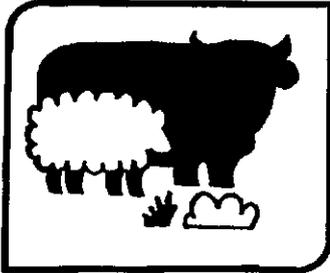
It is expected that about 750 acres per year will burn as wildfires, based on planned suppression organization. The Wildfire Effectiveness Index will be about \$715 per 1000 acres protected.

About 25,000 acres will have been prescribed burned per year, resulting in 246,000 acres burned at the end of the first decade.

### In Fifty Years

No dramatic changes in the number of acres burned by wildfire are expected. Much of the Forest will have reached a near stable mosaic of residue levels, as a direct result of managed timber stands and appropriate use of prescribed fire.

## Forage and Livestock Use



### Goal(s)

Provide forage for wildlife and domestic livestock in a manner consistent with other resource objectives and environmental constraints, while maintaining or improving ecological condition and plant community stability.

### Objectives

Present permitted use by domestic livestock is 58,000 Animal Unit Months (AUM's). The Forest objective is to improve all range conditions to good or excellent by intensifying management. In the long run, present AUM's can probably be maintained or increased; but short-term (within this planning period) reductions in AUM's are predicted, particularly for improving riparian conditions. Average annual production for the first decade will not be substantially different from today, due to increases in upland forage production, resulting primarily from timber harvest.

Structural and nonstructural improvements play a large role in achieving overall forage management objectives. As shown in Table 4-7, improvements are planned to increase over the next decade, and then decrease to a maintenance level thereafter.

Wild horses are found on particular areas of the Big Summit Ranger District. The number of wild horses is currently estimated at 60 and is expected to be maintained at that level indefinitely (see Appendix I, Management of Wild Horses).

Table 4-7

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Forage Production <sup>1/</sup>	M AUM's/Yr	57	62.5	66.6	63.9	65.6
<b>Structural Improvements</b>						
Fencing	Miles/Yr.	35.7	0	0	0	0
Fencing Removal	Miles/Yr.	3.0	0	0	0	0
Water Developments	Number/Yr	14.0	0	0	0	0
<b>Nonstructural Improvements</b>						
Juniper Treatment For Riparian Improvement	Acres/Yr.	796	0	0	0	0
Range Burning For Forage Enhancement	Acres/Yr.	4,072	4,072	4,072	4,072	4,072
Wild Horses	Number	60	60	60	60	60

<sup>1/</sup> AUM fluctuations are due primarily to acres of transitory range made available by timber harvest type, amount and location.

## Desired Future Condition

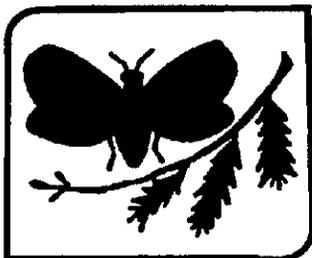
### In Ten Years

Most allotments will be managed under more intensive grazing systems than present. Management changes and the resulting structural improvements necessary to improve riparian conditions to excellent will have been installed. Predicted reductions in available AUM's due to riparian exclosures and other riparian improvement practices, completed during the first decade, will generally have been offset by increases in transitory range made available through timber harvest and additional water developments installed in the uplands.

### Fifty Years and Beyond

Range conditions will be good and forage production will be higher than at present due to improved range conditions. All necessary range improvements (structural and non-structural) will be completed, and the range improvement program will consist primarily of reconstruction and maintenance. Most riparian areas will be in excellent condition.

## Forest Health



### Goal(s)

Maintain the health of the Forest for present and future uses, within management's ability to do so. Forest health is defined as "a condition where biotic and abiotic influences on the Forest (i.e. insects, diseases, atmospheric deposition, silvicultural treatments, harvesting practices) do not threaten management objectives either now or in the future."

### Objectives

Utilize Integrated Pest management (IPM) strategies to maintain forest health.

Prevention and control of damage to forest resources, caused by insects, diseases, and noxious weeds will be accomplished through a number of practices.

Resource activities to control pests will depend on site specific analysis and may vary greatly from year to year. Emphasis will be on prevention rather than control. When control is necessary, the method with the least impact on the environment will be used. Best estimates of activities for the next five decades are shown in Table 4-8. These do not represent target acres of accomplishment.

Table 4-8

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Integrated Pest management Strategies</b>						
Manual <sup>1/</sup>	Acres/Yr.	100	100	100	100	100
Mechanical <sup>1/</sup>	Acres/Yr.	200	200	200	200	200
Biological <sup>2/</sup>	M Acres/Yr	100	100	100	100	100
Chemical	Acres/Yr.	200	200	200	200	200

Note: These acres do not include scheduled activities for resource management, such as precommercial thinning.

<sup>1/</sup> Includes 25 acres of noxious weed control

<sup>2/</sup> Primarily related to control of spruce budworm and other defoliators, using *Bacillus thuringiensis* (b t ), or other suitable biological agents

## Desired Future Condition

### In Ten Years

Integration of pest management strategies in all activities will be practiced. Some of the most important activities are:

Accelerated precommercial and commercial thinning in overstocked ponderosa pine and lodgepole pine where this can be done within management area and economic limitations.

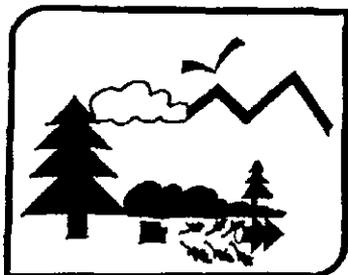
Attempts to identify severe root rot pockets and to treat these stands as soon as practical.

Stands being regenerated, including selection cutting, emphasizing treatments that will favor early seral species. This will be done by a combination of prescribed fire, planting, site preparation for naturals, and seed tree selection.

### Fifty Years and Beyond

Continued practice of standards and guidelines for Forest Health should provide stands with manageable levels of most root rots, dwarf mistletoe, and bark beetles. Care will be needed when planning projects around the boundaries of old growth or wilderness areas to prevent encroachment of diseases. Forest managers will need to be on the alert for insects and diseases in the younger stands as these become more common.

## Forest Residues



### Goal(s)

Manage forest residues (woody biomass), resulting from either natural or man-caused processes, as a separate resource. Provide this resource for the benefit of resources such as soil, water, wildlife, and timber, as well as for the social and economic benefits associated with firewood gathering and other family oriented endeavors centered around residues.

### Objectives

Provide for natural levels of forest residues consistent with the access, vegetation community, stage of stand development, on-site nutrient cycling, diversity, and forest protection needs. Desired residue profiles for common vegetation types around the Forest are shown in Forest-wide Standards and Guidelines under Forest Residues. More specific profiles by management area are shown in Section 3, Management Area Standards and Guidelines. Approximately 12 tons per acre represents a weighted average residue condition across the Forest. This equates to about 10.4 million tons of minimum residue requirements for the whole Forest (See Minimum Site Requirements, Table 4-9.)

Remove residues that exceed minimum site requirements. Attempt to use excess residues to reduce the impacts of alternate disposal methods (machinery operations and/or emissions from prescribed fire).

Table 4-9 shows how the amount of forest residues change over time. Units represent total amount of residues available on the Forest at any one time, and not an average annual output.

**Table 4-9**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Pretreatment Residues</b>	MM Tons	20.0	18.9	18.2	16.6	17.1
<b>Minimum Site Requirements</b>	MM Tons	10.4	10.4	10.4	10.4	10.4
<b>Excess Residues</b>	MM Tons	9.6	8.5	7.7	6.2	6.7
Activity	MM Tons	4.3	4.2	3.8	2.2	3.3
Natural	MM Tons	5.3	4.3	3.9	4.0	3.4
<b>Excess Residues Removed</b>	MM Tons	5.3	5.1	4.6	2.9	3.9
Activity	MM Tons	4.2	4.2	3.8	2.2	3.3
Natural	MM Tons	1.1	0.9	0.8	0.7	0.6
<b>Excess Residues Remaining</b>	MM Tons	4.3	3.4	3.2	3.3	2.7
<b>Total Residues Remaining</b>	MM Tons	14.7	13.8	13.6	13.7	13.1

## Desired Future Condition

### In Ten Years

The Forest will continue to develop and implement its residue management program to assure the proper retention, use, and disposal of forest residues.

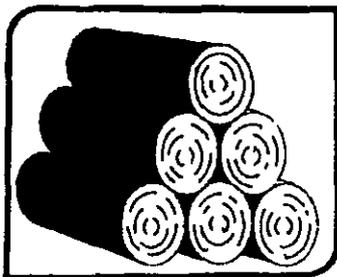
Compared to today, residues (activity slash, etc.) remaining after projects will gradually increase as implementation progresses. A more natural mosaic of residues will provide for greater habitat variety, increased nutrient capital on-site, improved visual variety, and cost-efficient wildfire protection opportunities.

### Fifty Years and Beyond

The Forest will have a fully operational residue management program integrated into the project planning and implementation process.

Much of the Forest will have a natural appearing mosaic of residues managed to provide for biological diversity, appropriate nutrient cycling regimes, aesthetics, and a reasonable level of wildfire protection.

## Fuelwood



### Goal(s)

Provide fuelwood for personal and commercial use, consistent with other resource objectives and environmental constraints.

### Objectives

The output of fuelwood shown in Table 4-10 declines over time, primarily as a result of the declining timber harvest. Other fuelwood sources will be increasing (thinning removals, etc.), but will not make up for the difference in lost timber sale slash.

Table 4-10

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Fuelwood	M Cords/Yr	13	12	11	11	11

## Desired Future Condition

### In Ten years

The availability of dead lodgepole will be much less than today. Greater distances will need to be driven to find quality large material.

The supply of firewood in general will be about 13 thousand cords per year until 1995, and then will decline to about 11 thousand cords per year. If present demand continues, it will not be met with the quality and accessibility currently available.

### Fifty Years and Beyond

Cull sawlogs that are commonly available for wood cutting today will be very scarce. There will still be tops and limb wood, and thinning size trees four to seven inches DBH. Many people will find gathering this size of wood too time consuming and will elect to buy firewood from commercial cutters. Demand and value of smaller logs for firewood will likely exceed the value for sawlogs, therefore much of firewood needs will be supplied by commercial sales. Opportunities to allow individuals to thin younger stands and use the resulting material for firewood will be available.

## Lands



### Goal(s)

Permit special land uses that have been evaluated in relationship to land management objectives, that are compatible with other resource objectives and environmental considerations, and that are in the public interest.

Achieve a pattern of land ownership that best supports resource goals, improves the efficiency of resource management, and demonstrates effective forest management.

### Objectives

Table 4-11 shows the number of special uses that are projected to increase in the first two decades and then level off.

Table 4-11

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Special Use Permits	Number <sup>1/</sup>	48	54	60	60	60

<sup>1/</sup> At any one time.

## Desired Future Condition

### In Ten Years

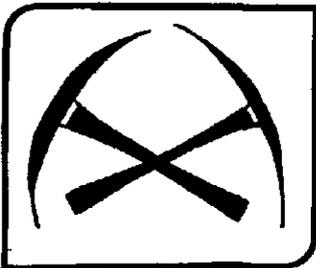
Permits for special recreational events will increase. The National Recreation Strategy will result in additional permits for recreational facilities and activities. The number of permits for electrical and telephone permits will also increase as parcels of private land scattered throughout the Forest are developed for recreational purposes.

### Fifty Years and Beyond

The land exchange program will have achieved a more efficient land ownership pattern. Isolated blocks of Forest Service land will have been exchanged for private inholdings; however, inholdings with high recreation and/or real estate values will remain in private ownership.

The number of acres of land in National Forest ownership will remain approximately the same. Land exchanges will result in the acquisition of some private inholdings and the disposal of some isolated parcels of National Forest land.

## Minerals and Energy



### Goal(s)

Provide for and facilitate the exploration, development, and production of mineral and energy resources in coordination with other resource objectives, environmental considerations, and mining and leasing laws.

### Objectives

#### Oil and Gas

The Forest will respond to industry demand for oil and gas leasing. On the Forest, 807,521 acres (96 percent of the Forest) are available for leasing. Of these acres, 718,370 (85 percent of the Forest) are classified as prospectively valuable for oil and gas. This is assumed to be the maximum acreage that would be leased. Presently, approximately 140,000 acres of Forest land are under lease. Approximately 670,000 acres have been under lease historically.

Domestic demand for oil and gas leasing is directly related to International production and prices. Increases in the cost of imported oil trigger increased domestic exploration and production, and probably an increase in leasing on the Forest. However, a competitive bidding system for the sale of leases could result

in higher lease costs, and thus, fewer acres of land leased. Changes in the International situation, changes in technology, failure to discover a valuable deposit, or depletion of deposits would then result in a decline in the acres listed. Table 4-12 shows projected estimates of future leased acres.

**Table 4-12**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Oil and Gas	M Acres Leased <sup>1/</sup>	140	670	40	400	400

<sup>1/</sup> At any one time.

### Geothermal

The Oregon Department of Geology and Mineral Industries (DOGAMI) has classified the entire Forest as “favorable for the discovery at shallow depth (less than 1,000 meters) of thermal water of sufficient temperature for direct heat applications.” However, approximately three-quarters of the state is given this classification, and DOGAMI states “it is probable that only small areas of this region are truly underlain by such thermal water.” For the purposes of this Plan, it is assumed that geothermal exploration in Oregon during the next five decades will be concentrated in those areas where it is now occurring, and the Forest will not issue any geothermal leases, as illustrated in Table 4-13.

**Table 4-13**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Geothermal	Acres Leased	0	0	0	0	0

### Locateable Minerals

The Forest will encourage and facilitate responsible mining exploration and development in a manner consistent with other resource objectives. On the Forest 804,510 acres (95 percent of the Forest) are open to mineral entry. Of this amount, 81,460 acres are classified as having either high or moderate potential for gold or mercury. Gold exploration activity has increased during this decade. The discovery of a valuable gold deposit would result in increased development and exploration activities. Conversely, the failure to make a valuable discovery could result in a decrease in mining interest (and therefore mining claims) on the Forest. Table 4-14 shows projected estimates of future claims.

Table 4-14

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Locatable</b> (Gold, Mercury, Silver, etc.)						
<b>Lode Claims</b>	Number <sup>1/</sup>	981	1,000	1,000	1,000	1,000
<b>Placer Claims</b>	Number	31	30	30	30	30
<b>Tunnel Site Claims</b>	Number	10	0	0	0	0

<sup>1/</sup> At any one time.

### Common Variety Minerals

The aggregate mined on Forest land is mostly used to surface Forest Service, State, and County roads. The demand for this material is expected to remain constant over the next five decades. Table 4-15 shows projected estimates.

Table 4-15

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Common Variety</b> (Gravel, Cinders, etc.)	M Cubic Yards/Yr	85	85	85	85	85

### Desired Future Condition

#### In Ten Years

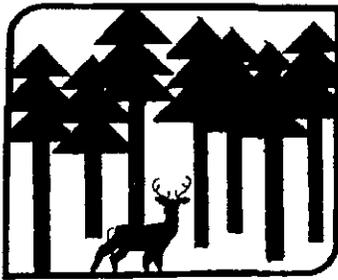
Exploration and development of locatable (hard rock) and leaseable (oil and gas) minerals will be allowed on the Forest, except in locations specifically withdrawn from mineral entry (see Standards and Guidelines, Section 3). The actual amount of exploration and development is expected to remain at existing levels throughout the first decade, then rise rapidly for oil and gas exploration due to an expected increase in the nation's demand. Up to 80 percent of the Forest may be leased for oil and gas exploration, if this occurs. If a large, valuable deposit is discovered, mining activity could result in a significant increase in both exploration and development (but is not predicted at this time). Extraction of saleable (common variety) minerals will be limited to existing pits or new locations that have approved operating plans, and is not expected to increase significantly during the first decade.

#### Fifty Years and Beyond

Oil and gas exploration is expected to rise nearly four-fold after the first decade due to an increase in the nation's demand. It is predicted that this will level off to a somewhat lower level thereafter, and remain constant past fifty years. Geothermal exploration is zero now, and no increases are expected for the next five decades. No substantial increase in mining activity is projected, and it will

remain at about constant levels throughout the next fifty years, barring the discovery of a large, valuable deposit. Extraction of common variety minerals is expected to remain relatively constant for the next five decades and beyond.

## Old Growth



### Goal(s)

Provide stands of old growth throughout the Forest for wildlife habitat, ecosystem diversity, and aesthetic diversity.

### Objectives

Old growth stands will be present in various areas of the Forest, even though total acres will be declining over time. Table 4-16 displays how total acres of existing old growth will slowly decline over the next five decades. Units are expressed as totals, rather than as an average annual output.

**Table 4-16**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Allocated Old Growth For Dependent Species	M Acres <sup>1/</sup>	18.0	18.0	18.0	18.0	18.0
Unallocated Old Growth in Wilderness, Roadless & Research Natural Areas	M Acres	30.3	30.3	30.3	30.3	30.3
Limited Harvest Areas <sup>2/</sup>	M Acres	6.8	6.3	5.8	5.3	4.8
Full Harvest Areas <sup>3/</sup>	M Acres	38.7	29.3	20.1	10.9	2.0
<b>Total Old Growth</b>	<b>M Acres</b>	<b>93.8</b>	<b>83.9</b>	<b>74.2</b>	<b>64.5</b>	<b>55.1</b>

M = Thousand

<sup>1/</sup>This does not include an additional 1,270 acres that have been allocated for old growth dependent wildlife species. These acres currently are not "suitable" old growth, they are currently "capable" and are expected to become suitable in the future.

<sup>2/</sup>This includes visual and other unique areas like Deep Creek management Area, where management will include extended rotations (150 years plus)

<sup>3/</sup>This includes General Forest, Big Game Winter Range, and the portion of Rock Creek/Cottonwood Creek Unroaded Helicopter Area

## **Desired Future Condition**

### **In Ten Years**

Approximately 15 percent of the total forested acres on the Forest will be in an old growth condition. The majority will still exist in the General Forest areas, which are available for intensive timber management. Old growth stands allocated for old growth dependent wildlife species (18 thousand acres) will become more isolated as adjacent stands are harvested and placed in a managed condition. Barring a natural catastrophe, old growth found in wilderness, roadless and Research Natural Areas, will be maintained at current levels (about 30 thousand acres), and may even increase as younger stands develop old growth conditions. Stands with old growth characteristics will continue to be found at relatively high levels in visual corridors and other management areas which will be converted to managed stands at a relatively slow rate.

### **Fifty Years and Beyond**

Approximately nine percent of the total forested acres on the Forest will be in an old growth condition. The majority will be found in wilderness, roadless areas and Research Natural Areas (approximately 30 thousand acres). Only two thousand acres of old growth will exist in areas available for intensive timber management, but another 18 thousand acres allocated for old growth dependent wildlife species will be distributed throughout these areas and the Forest as a whole. Stands with old growth characteristics will still be found at relatively high levels in visual corridors and special management areas (about five thousand acres).

# Recreation



## Goal(s)

Emphasize the National Recreation Strategy.

Provide for a variety of recreational experiences across all areas of the Ochoco National Forest, in a manner consistent with other resource objectives and environmental constraints.

Protect unique natural and recreational features.

## Objectives

### Developed Recreation

Manage, improve, modernize, and expand the developed recreation sites based on use and needs.

The total supply of developed sites, as well as the projected use expressed in MRVD's (Thousand Recreation Visitor Days), are shown in Table 4-17.

**Table 4-17**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Developed Area Supply	M/RVD's	159.4	159.4	159.4	159.4	159.4
Projected Use	M/RVD's	116.1	130.5	143.0	156.6	159.4

### Dispersed Recreation

Provide for a wide variety of recreational opportunities.

Table 4-18 shows the estimated supply, plus actual projected use for dispersed recreation, expressed in MRVD's.

**Table 4-18**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Dispersed Supply						
Roaded	M/RVD's	1204.1	1220.2	1220.2	1220.2	1220.2
Unroaded	M/RVD's	44.0	44.0	44.0	44.0	44.0
Wilderness	M/RVD's	25.7	25.7	25.7	25.7	25.7
Dispersed Use Projected						
Roaded	M/RVD's	262.4	288.8	312.2	337.6	365.0
Unroaded	M/RVD's	32.2	35.3	38.5	42.0	44.0
Wilderness	M/RVD's	16.3	17.8	19.2	21.0	22.9

### Hunting and Fishing Use

Hunting and fishing use occurs across all areas of the Forest, including wilderness areas and developed recreation sites. The use figures, shown in Tables 4-17 and 4-18 for Dispersed and Developed Recreation include projections for hunting and fishing. For informational purposes, they have been extracted and converted to WFUD's (Wildlife Fish User Days), and are shown in Table 4-19.

**Table 4-19**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Hunting Use	WFUD's	158.2	155.8	156.8	155.4	151.0
Fishing Use	WFUD's	61.7	71.8	74.0	76.4	79.2

### Off-Road Vehicles (ORV's)

ORV use, and trail construction and reconstruction, will be allowed where they are not in conflict with other resource objectives. Routes will be identified on the Forest to encourage use in specific areas by offering a variety of challenges and terrain. No numerical estimates are presently available.

### Trails

A managed trail system will be provided for a variety of uses, including hiking, horseback riding, mountain biking, all terrain vehicles (ATV's), cross-country skiing, and snowmobiles.

There are currently 96.8 miles of summer use trails. About 186.9 miles of new construction and 13.0 miles of reconstruction are planned for nonmotorized use in the first decade, along with 95 miles of ATV trail construction, providing a

total of 378.7 miles of summer trails. In the second decade, a similar amount of construction and reconstruction is planned, providing a total of 563.6 miles of summer use trails.

There are currently 84 miles of winter use trails. Of that, 75 miles are designated snowmobile trails and nine miles are cross-country. In the first decade, 100 miles of construction and reconstruction of cross-country trails are planned, providing a total cross-country system of 109 miles. About 210 miles of construction are planned for snowmobile trails in the first decade, providing a total of 285 miles in the snowmobile trail system. Total winter trails will be 394 miles at that time. Construction and reconstruction of winter use trails in the second decade will be less than half of that for the first decade, providing a total winter system of 474 miles. See Table 4-20.

**Table 4-20**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Summer Use Trails</b>						
Non-Motorized	Miles	283.7	468.6	468.6	468.6	468.6
Construct/ Reconstruct	Mi./Year	18.7	18.5	0	0	0
ATV (Motorized)	Miles	95.0	190.0	190.0	190.0	190.0
Construct/ Reconstruct	Mi./Year	9.5	9.5	0	0	0
<b>Total Summer Trails</b>	<b>Miles</b>	<b>378.7</b>	<b>563.6</b>	<b>563.6</b>	<b>563.6</b>	<b>563.6</b>
<b>Winter Use Trails</b>						
Cross-Country Skiing	Miles	109.0	149.0	149.0	149.0	149.0
Construct/ Reconstruct	Mi./Year	10.0	4.0	0	0	0
Snowmobile	Miles	285.0	325.0	325.0	325.0	325.0
Construct/ Reconstruct	Mi./Year	21.0	4.0	0	0	0
<b>Total Winter Trails</b>	<b>Miles</b>	<b>394.0</b>	<b>474.0</b>	<b>474.0</b>	<b>474.0</b>	<b>474.0</b>

## Desired Future Condition

### In Ten Years

A variety of recreational opportunities will be available, focusing on dispersed recreation, backcountry recreation, and developed recreation across the Forest.

The existing campgrounds, picnic areas, and boat ramps will be maintained in the future; in the next 10 years additional camping facilities will be added at Falls, Delintment Lake, and Antelope Reservoir, Ochoco Forest Camp, Ochoco Divide, Sugar Creek, and several horse camps at various locations across the Forest.

Opportunities for nonmotorized recreation will continue to be provided in three wildernesses (Black Canyon, Mill Creek, and Bridge Creek), and three roadless areas (Lookout Mountain, Rock Creek/Cottonwood Creek, and Silver Creek).

Most of the Forest will continue to be open to off-road vehicle (ORV) use, but use will be directed to and encouraged on designated routes that will be developed. Some areas or routes will be closed and are designated on the travel plan map (map packet). ORV use will be managed and monitored to provide for resource protection.

A complex trail system will be available, providing extensive opportunities for both summer and winter use. Some trails will connect to the East-West Intertie, a trail joining the Pacific Crest Trail with the Desert Trail. Thirty-eight miles of existing trails in wilderness will be maintained. Some relocation and reconstruction of trails in Black Canyon will be necessary to reduce sedimentation caused by existing locations in creek crossings and boggy areas.

ATV and mountain bike routes will be available, offering a wide variety of terrain and experience levels. An extensive, marked snowmobile route system and cross-country ski trail system will also be available for winter time use.

Even though the majority of the Forest will be open to snowmobiles in the winter, some areas will be closed in order to emphasize other resource amenities (See Management Area Standards and Guidelines, Recreation, Section 3, this chapter).

## Fifty Years and Beyond

Opportunities for dispersed recreation will have increased substantially over today's conditions. A much larger trail system will be in place and most trails will show substantial use. New trailheads, functional for more user types, will be in place. Loop trails, designated for day hikes (in such areas as Stein's Pillar Recreation Area) will include interpretive features.

Most developed recreation sites will have completed construction and reconstruction, and will be under a fee structure with maintenance costs being recovered.

Semiprimitive nonmotorized and semiprimitive motorized areas will be maintained to retain their recreational opportunities as planned today. No permanent road intrusions will have occurred in the three major roadless areas on the Forest, i.e. Rock Creek/Cottonwood Creek, Lookout Mountain (Prescription Area A), and Silver Creek.

## Scenic Resources



### Goal(s)

Integrate visual quality management into all resource activities which have potential negative impacts on scenery.

Provide natural appearing scenery along major travel ways, at developed and dispersed recreation sites, and in management areas where recreation is emphasized.

Participate in the "National Forest Scenic Byways" program, through nomination of other forest roads that exhibit exceptional qualities and meet national selection criteria.

### Objectives

Table 4-21 lists the acres projected for scenic resources by Visual Quality Objective (VQO). In addition to specific road corridors, this includes a number of other management areas, e.g. Bandit Springs Recreation Area, that will be managed with scenic resources as either a primary or secondary objective. See Standards and Guidelines, Section 3, this chapter, for listing of VQO's by Management Area.

**Table 4-21**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Preservation	M Acres	42	42	42	42	42
Retention	M Acres	85	85	85	85	85
Partial Retention	M Acres	50	50	50	50	50
Modification and Maximum Modification	M Acres	668	668	668	668	668

### Desired Future Condition

#### In Ten Years

The figures shown in Table 4-21 represent a management allocation, but they do not accurately reflect what the Forest will look like in ten years. In reality, a large percentage of the Forest acres will continue to appear natural, as management prescriptions will not have been completely implemented. Timber management schedules for the General Forest areas will still maintain some degree of higher scenic values than Modification or Maximum Modification, even though activities will have occurred on many of the acres, and will continue to do so at a relatively high rate.

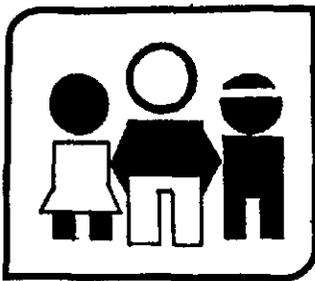
Along major travel routes, the Forest will appear as natural as possible, providing a variety of landscapes, and emphasizing natural features. The major recreation sites will be as natural as possible and facilities will be designed and placed to fit into the natural surroundings. A number of management areas emphasizing recreation will exhibit similar visual qualities in order to meet resource objectives.

In timber stands existing in areas with both partial retention and retention visual quality objectives, the Forest visitor will be able to view large, open park-like stands of ponderosa pine, as well as uneven-aged stands with a variety of age classes. Mixed conifer stands will exhibit a variety of size and age classes, with a focus on species such as larch and aspen, to give seasonal variety.

### Fifty Years and Beyond

In fifty years, the figures shown by VQO in Table 4-21 should be reflected on the ground, as the majority of the management area prescriptions have been implemented. Primary scenery will be concentrated along travel routes and in management areas. But, General Forest areas will still appear somewhat natural due to use of uneven-aged management and other management techniques designed to reduce the negative viewing intensity of project activities. Size and color variety will be less in General Forest areas than in management areas allocated for higher Visual Quality Objectives.

## Social and Economic



### Goal(s)

Manage the Forest to lend support to the social and economic viability of local communities, as well as to the nation as a whole.

Provide equal opportunities to people regardless of race, color, creed, sex, marital status, age, handicap, religion, or national origin.

Maximize net public benefits (36 CFR 219.3).

### Objectives

Maximize the overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not, in a manner consistent with the principles of multiple-use and sustained yield.

Table 4-22

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
<b>Social</b>						
Changes in Jobs	Number	109	NOT AVAILABLE			
Changes in Income	Million \$	1.6	NOT AVAILABLE			
<b>Economic</b>						
Total National Forest						
Planned Budget	Million \$	10.2	9.3	9.4	9.8	9.7
Returns to Government	Million \$	19.4	22.3	20.8	19.5	21.5
Present Net Value	Million \$	475.0	NOT APPLICABLE			
Payments to Counties	Million \$	4.9	NOT AVAILABLE			

## Desired Future Condition

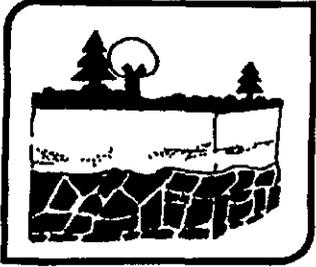
### In Ten Years

The management of forest resources will be accomplished in an economically efficient manner. Investments in timber management or timber culture will take in to account site productivity, product value and marginal rates of return. Resources with market value - special uses, minerals, grazing and timber - which contribute to country receipts and the local economy, nonmarket-unroaded recreation, wildlife habitat, and unspoiled scenery - will experience increasing competition. Urban population values and demands for the latter values from the National Forest will increasingly conflict with local utilitarian views and lifestyles. The Forest Service caught in this conflicting dichotomy will continue to seek to balance use, retain options, and to form public partnerships

### Fifty Years and Beyond

The dichotomy and competition for resources, and the purposes of the National Forests, will be politically and legislatively addressed and the questions of today resolved, although new issues will arise. Greater uniformity and clarity will exist in how publics view the National Forest, their purpose, and management. The present method of payment to counties, which encourages conflict, will be changed to something other than that requiring local governments to emphasize resource extraction from the National Forests in order to maximize county receipts.

# Soil



## Goal(s)

Manage soil to maintain, restore, or improve its natural productive potential.

Strive to reduce soil compaction and displacement to get as close to 90 percent of any activity area (including permanent, rocked, and nonsurface roads) in a noncompacted or nondisplaced condition (as is realistically possible) within one year of the projects completion.

## Objectives

Land disturbing management activities, such as logging, road building, grazing, and certain recreational uses have potential for dramatic decreases in soil productivity if not managed or mitigated correctly. Soil erosion and compaction are conditions most seriously affected by activities on the Forest. It is the objective of the Ochoco National Forest to prevent or correct long-term soil damage in all activity areas that result in productivity loss on lands dedicated to plant and water production. The following parameters have been established and serve as objectives to measure the affects of activities on the soil resource.

Soil loss (erosion) results primarily from road building and timber harvesting, but also reflects the overall condition of watersheds on the Forest which may be the combined effect of all activities, including recreation and grazing. Watershed condition objectives have been established for the Forest, and are found under "Water," this section, this chapter. The tons of soil loss shown in Table 4-23 assume that watershed condition objectives will be met, and reflect what will be lost over time, despite proper management and mitigation, over the entire Forest.

Soil compaction results primarily from timber harvest and related activities (such as slash disposal). There is an estimated 102 thousand acres of forested soils in a compacted condition today, as a result of past and ongoing activities. In order to meet management requirements for soil, the acres of tillage shown in Table 4-23 (to relieve compaction at the 20 percent level) are planned over the next five decades. There are currently about 1,500 acres of tillage completed annually. Depending on annual management objectives and budgetary constraints, additional acres of tillage (at the 10 percent level) should also be considered.

**Table 4-23**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Soil Loss (erosion)	M Tons/Yr.	1.7	1.5	2.1	.9	1.9
Tillage For Compaction at 20 Percent Level (Maximum Allowed)	M Acres/Yr	1.7	1.3	2.0	.8	1.8
Tillage at 10 Percent Level (Forest Goal)	M Acres/Yr	3.0	2.3	3.6	1.4	3.2

## Desired Future Condition

### In Ten Years

As more of the Forest acres are affected by vegetation management activities, soil erosion will increase. These activities are mitigated in part by adherence to standards and guidelines. Soil loss is estimated to be limited to 1.7 thousand tons per year Forest-wide.

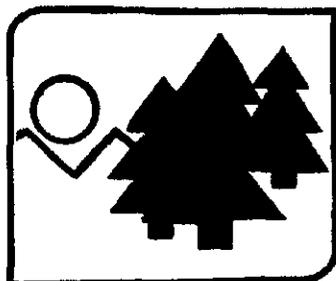
As areas with compacted soils are re-entered with timber sales or other projects, significant achievements in prevention and rehabilitation of compacted soils will be observed. The Forest will be moving closer to achieving a long-term goal of having no more than 10 percent of the managed acres in an unproductive condition.

### Fifty Years and Beyond

Most available acres will be under some type of vegetative management, particularly for timber production. Fluctuations in soil loss will vary from year to year, and decade to decade, as a direct result of fluctuations in these activities. With adherence to standards and guidelines, soil loss should be limited to 1.9 thousand tons per year, based on current modeling.

During or near the end of the fifth decade, the Forest will have re-entered most acres of ground previously compacted, and rehabilitated these soils through tillage or other appropriate means, at least 80 percent of the total acres will be in a fully productive condition.

# Timber



## Goal(s)

Provide for the production of quality wood products, in a manner consistent with other resource objectives, environmental constraints, and economic efficiency.

## Objectives

Table 4-24 provides a summary of major timber-related data for five decades in terms of average annual outputs. More detailed data concerning land suitability, comparisons with previous plans, and harvest schedules by management area are contained in Appendix A. These figures are projections of potential timber outputs based on available inventory data and assumptions, subject to annual budgets. All units are based on an average annual output. (MM=Million, M=Thousand.)

**Table 4-24**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Long-Term Sustained Capacity	MMCF/Yr.	19.0	19.0	19.0	19.0	19.0
Allowable Sale Quantity						
All Species	MMCF/Yr.	19.0	19.0	19.0	19.0	19.0
Ponderosa Pine Only	MMBF/Yr.	115.0				
	MMCF/Yr.	13.7	13.1	13.5	9.9	11.2
	MMBF/Yr.	82.0				
Estimated Salvage	MMCF/Yr.	0.8	0.5	0.2	0.2	0.2
	MMBF/Yr.	4.0				
Harvest Prescriptions						
Uneven-aged Selection	M Acres/Yr	6.2	5.4	5.9	5.5	6.0
Even-aged						
Clearcut	M Acres/Yr	.9	2.0	2.0	2.8	2.7
Shelterwood	M Acres/Yr	2.1	3.5	1.6	.4	.3
Overstory removal on existing stands	M Acres/Yr	5.3	3.2	0	0	0
Commercial Thin	M Acres/Yr	1.3	2.4	6.7	1.6	7.9
Reforestation	M Acres/Yr	3.0	2.5	3.6	3.3	3.0
Timber Stand Improvement	M Acres/Yr	5.4	5.4	8.3	7.2	8.9

## Desired Future Condition

### In Ten Years

Forest stands will provide the raw material for industry as well as the setting for a variety of recreational experiences, and habitat for native wildlife species. Most of the harvest will still be coming from mature stands, but second growth stands will be providing small amounts, mainly from ponderosa pine. Many of the existing two-story stands (predominately ponderosa pine) will have had selection cutting. Clearcuts will be more common on mixed conifer (predominately fir species), and more young plantations will be visible. Sufficient acres of habitat for defoliators will be existing and will maintain the risk of an epidemic of spruce budworm or tussock moth. Commercial thinning in immature pine stands will be increasing, with an emphasis on prevention of bark beetle damage, but the risk of damage from mountain pine beetle will be reaching a peak in overstocked stands across the Forest. Ripping or cultivation may be needed to reduce soil compaction in existing stands.

### Fifty Years and Beyond

Nearly all existing mature or two-story pine stands in the MA-F22 General Forest area will have had selection cuts or an overstory removal, and possibly a commercial thinning. Timber harvest will be coming from remaining mature stands and early commercial thinnings; the only overmature stands will be in wilderness and roadless areas, research natural areas, designated old growth habitat stands, portions of riparian areas, and portions of visual corridors. Most stands in General Forest will be under 130 years old and will be in a managed even-aged or uneven-aged condition. Ponderosa pine will be the major species, followed by western larch, lodgepole pine, Douglas-fir, white fir, and Engleman spruce. Except for pine climax types, nearly all stands will have a mixture of species. Hardwoods such as cottonwood, aspen, alder and willow will be more common than today along streams, meadows and wet areas. Most stands that are presently sapling or pole size will have had one or more commercial thinning, and some will be approaching a final harvest. Two-thirds of the mixed conifer stands will be in a managed even-aged condition from 0 to 60 years of age. All managed stands will be near optimum stocking level for the given management area; risk of damage from most insects and diseases will be reduced below today's level. Cultural activities, such as planting, thinning, and possibly pruning and fertilization, may be seen throughout much of the Forest. The Forest tree improvement program will have identified families best adapted to specific sites and conditions, seedlings from these families will be used in most plantations. A designated skid trail and landing system will be in place and used for most logging operations. Desired levels of snags and down woody material will exist on all timber stands. Soil compaction and disturbance will be within established guidelines.

## Transportation System



### Goal(s)

Plan, design, operate and maintain a safe and economical transportation system that provides efficient access for the movement of people and materials involved in the use and protection of the National Forest lands.

### Objectives

Improve, expand, and maintain the road system to support other resource objectives in accordance with road management objectives, available funding to achieve economy, user safety, and resource protection.

New roads will be constructed to support timber management; some existing roads will be closed on a seasonal or yearlong basis due to structural limitations of the road, safety, or other resource considerations (such as those to meet wildlife needs or off-road vehicle (ORV) travel management needs). Ultimately, the road system will total 5478 miles, an increase of 20 percent over present mileage. By the year 2015, 63 percent of the new mileage will be completed; 81 percent will be completed by the year 2035. Roads will be constructed in roadless areas released from roadless management. Others will replace present low standard roads that are unsafe, causing resource damage, or that do not meet resource management needs. Unneeded roads will be obliterated and revegetated. The majority of the arterial and collector system is established; however, dollars will be allocated annually to maintain, restore to original design capacity, or increase the design capacity of the existing system. See Appendix A11 for proposed road construction and reconstruction schedule.

The miles of road open to passenger vehicles (Maintenance Level 3-5) and high clearance vehicles (Maintenance Level 2), and the miles closed seasonally or yearlong are shown in Table 4-25 and in Appendix D. At the end of the first decade, 67 percent of the Forest development road system will be open and unrestricted for passenger car or high clearance vehicle use, decreasing to 59 percent by the end of the fifth decade as additional road miles are closed on a seasonal or yearlong basis.

**Table 4-25**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
F.S. Roads, Open and Maintained, Total	Miles	4734	4935	5132	5231	5304
Passenger Car Use, Open and Maintained	Miles	844	850	850	850	850
High Clearance Use, Open and Maintained	Miles	2332	2210	2217	2221	2269
Closed, Seasonally or Yearlong	Miles	1558	1875	2065	2160	2185

## Desired Future Condition

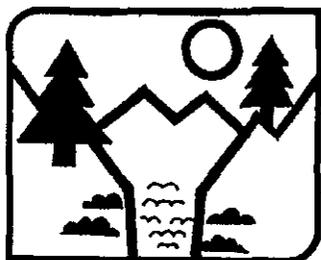
### In Ten Years

The principal access roads will be readily identifiable; they will have paved or gravel surfaces and will be suitable for passenger car use. Signs will assist the traveler in finding their destination. The other roads will appear rough or primitive, but most will be available for use by the more experienced traveler. Some will be closed with gates or signs.

### Fifty Years and Beyond

Most of the principal road systems will be completed and have paved or improved surfaces. A few may have State Highway designations. Most other roads will be either closed, restricted, or visually inviting to only the high ground clearance type vehicles used by the more seasoned forest traveler.

## Water



### Goal(s)

Maintain or improve water quality, quantity, and timing of run-off.

Comply with the objectives of the “Clean Water Act” and Oregon State water quality standards.

Provide water of consistently high quality to users and dependent resources.

### Objectives

Maintenance or improvement of water quality can best be achieved through proper management of entire watersheds at all times, with special attention given to riparian areas.

Threshold values have been established to disperse harvest activities optimally over the Forest land base (see Soil and Water Standards and Guidelines, Section 3, this chapter). They also serve as benchmarks against which to measure the risk of experiencing a major climatic event in conjunction with a watershed condition or sensitivity that has the potential to result in long-term impacts to stream channels and therefore, to water quality. In Table 4-26, threshold values for individual watersheds have been combined into one average value for the Forest, which is 30.1 percent. No increases in the amount of disturbance above this threshold value have been predicted over the next five decades. More detailed analysis at the individual watershed level has indicated that threshold values may be exceeded on some watersheds, a situation that can be corrected by rescheduling or relocating harvest activities within other watersheds.

A long-term Forest objective is to maintain or improve all riparian areas to “excellent condition.” Currently, 9,100 acres (roughly half) of the Forest riparian areas are in excellent condition. The remaining areas are scheduled for improvement over time. As can be seen in Table 4-26, a large portion of the needed improvement work will be completed in the first decade, even though recovery to full biological potential may require 20 to 60 years. See Section 2, Management Area Prescriptions, this chapter, for desired future condition of Management Area F15, Riparian Areas, and Appendices A12 and A15 for schedules of activities to achieve riparian area objectives.

Water quantity outputs shown in Table 4-26 are not the result of any specific proposals to increase run-off, but reflect instead the surface water leaving the Forest as a result of natural run-off, and any increased run-off expected to result from the manipulation of vegetation (mainly timber harvesting). Year to year variations in precipitation are likely to obscure any increase or decrease in run-off resulting from management activities.

**Table 4-26**

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Water Quality Watershed Condition	Percent Above Threshold	0	0	0	0	0
Watershed/Riparian Improvement Total in Excellent Condition	Acres/Yr.	319	50	50	50	50
	M Acres	10.0	11.2	12.7	15.1	17.5
Water Yield	M Acre Feet/Yr.	57.5	56.3	56.4	55.7	56.7

## Desired Future Condition

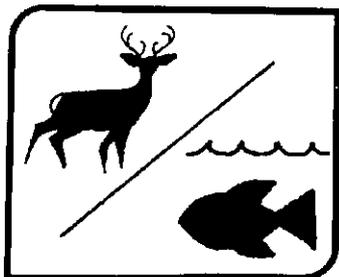
### In Ten Years

Individual watersheds on the Forest that are currently in excellent condition are expected to remain so. Activities will be monitored and those watersheds not presently in good condition are scheduled for first priority improvements, but it may take decades before the entire watershed and riparian areas are fully functional again (as intended). The chances of a major storm event causing severe impacts will be even less than today. No significant increases in run-off for the Forest are expected.

### Fifty Years and Beyond

It is expected that 90 to 95 percent of the riparian areas on the Forest will be in "excellent condition" by the end of the fifth decade. Additional research and monitoring of watersheds will have resulted in a situation where outputs of Forest resources (mainly timber) may be produced at levels explicitly tied to watershed condition, accounting for yearly and decadal variations in weather patterns and major storm events. Run-off of water is limited by total Forest acres and no significant increases are anticipated.

## Wildlife and Fish



### Goal(s)

Identify existing populations of any threatened, endangered, or sensitive species and maintain or improve their habitats.

Provide, manage and improve fish and wildlife habitats to maintain viable populations of existing native and desired non-native vertebrate species, including threatened, endangered, and sensitive species.

### Objectives

Population management objectives as established by the Oregon Department of Fish and Wildlife (ODFW) are 18,300 for deer and 2,600 for elk on the Forest. The Ochoco National Forest objective is to manage the habitat to meet these population objectives to the extent practical. Populations of deer and elk are limited by habitat capability, which changes over time in response to vegetation manipulation and open road density (see Wildlife and Fish, Forest-wide Standards and Guidelines, for discussion on Habitat Models).

Wildlife habitat improvement will include items such as: prescribed burning, road closures, snag replacement, seeding, planting, mechanical treatment of woody browse species, grasses to improve summer and winter ranges for big game, and protection and improvement of special habitats such as springs, wet meadows, riparian, and aspen communities.

Fish habitat improvements will include rock and log weir installation, large woody debris and boulder placement, juniper rip-rap, riparian fencing, and planting shrubs and trees to restore shade and provide bank protection and stabilization.

Projections for anadromous fish production are derived from smolt habitat production estimates. Fish habitat is a function of both instream condition, and overall condition of the particular watershed.

Habitat for old growth dependent wildlife species is provided in mostly contiguous, allocated stands of old growth ponderosa pine and mixed conifer across the Forest, as well as that provided in wilderness, roadless areas and research natural areas. Other old growth which exists across General Forest and other special management areas, is not generally considered suitable habitat for major indicator species (pileated woodpecker), mainly because of stand size requirements. Even though the total acres of existing old growth will decline over the five decade planning horizon, a long-term allocation of 19,250 acres, as well as 30,300 unallocated acres in wilderness, research natural areas and unroaded areas will ensure maintenance of suitable habitat for the species. In addition, 19,250 acres of supplemental feeding areas surrounding each old growth block will be provided. See Table 4-27 and Table 4-16, with footnote 1/.

Table 4-27

Resource/Activity	Unit of Measure	Decade				
		1st	2nd	3rd	4th	5th
Deer Population	M Numbers	18.3	18.3	18.3	18.3	18.3
Elk Population	M Number	3.0	2.9	2.9	2.8	2.6
Wildlife Habitat Improvement <sup>1/</sup>	M Acres/Yr	.5	.4	.3	.2	.1
Fish Production (Yearly)						
Anadromous	Smolt Habitat Capability Index (M Smolt)	121.00	136.0	164.0	192.0	220.0
Resident	M Numbers	783.9	1105.0	1639.0	2707.0	2707.0
Fish Habitat Improvement <sup>1/</sup>	Acres/Yr.	639	50	50	50	50
Snag Habitat for Cavity Nesters (Average Across the Forest)	Percent of Potential	47	49	51	55	54
Habitat for Old Growth Dependent Species						
Allocated Old Growth	M Acres	19.3	19.3	19.3	19.3	19.3
Supplemental Feeding Areas	M Acres	19.3	19.3	19.3	19.3	19.3
Unallocated Old Growth <sup>2/</sup>	M Acres	30.3	30.3	30.3	30.3	30.3
Total Habitat <sup>3/</sup>	M Acres	68.9	68.9	68.9	68.9	68.9

<sup>1/</sup> Shown as acres, but is actually a combination of acres and numbers of structural improvements.

<sup>2/</sup> These occur in wilderness, roadless and research natural areas

<sup>3/</sup> Assumes 60 percent occupancy by dependent species, which may or may not occur at any one time

## Desired Future Condition

### In Ten Years

In ten years, habitat capability on the Forest will continue to exceed that needed to meet Oregon Department of Fish and Wildlife objectives for both deer and elk, based on current modeling procedures and assumptions. Cover is expected to become the limiting habitat factor for big game, especially elk, and will be

declining over time, but decreased open road density and increases in habitat enhancement in winter range and general forest areas are expected to compensate for the cover loss.

As a result of fish habitat improvement and watershed/riparian restoration (see objectives for Water), relatively high populations of both anadromous and resident fish are expected to be available after ten years (as shown in Table 4-27).

The amount of snag habitat across the Forest will remain at current levels Forest-wide. The amount will vary by management area, ranging between 40 and 100 percent of the number needed to support the potential populations of primary cavity excavators. Forest-wide, snag habitat will average about 47 percent in ten years.

In ten years, approximately 68,900 acres of habitat will be available for old growth dependent wildlife species (pileated woodpecker). This includes 19,250 acres of old growth allocated across the Forest, plus 30,300 acres unallocated but available in wilderness, roadless areas, and research natural areas. Supplemental feeding areas (also 19,250 acres), not specifically meeting old growth definitions, will also be available in close proximity to actual, allocated old growth stands.

### Fifty Years and Beyond

It is less certain that current ODFW objectives for both deer and elk can be met, due to expected decreases in overall cover across the Forest. It must be noted however, that ongoing research on habitat needs will provide management with better data than is currently available to project population estimates and to balance overall resource objectives. The estimates shown in Table 4-27 for fifty years and beyond are based on current models which are considered insufficient to predict accurate numbers of big game. These models are the best available at the present time.

As a result of fish habitat capability improvement (including watershed/riparian restoration), both anadromous and resident fish numbers are expected to increase in fifty years (as shown in Table 4-27).

The number of snags will actually increase Forest-wide, to an average of about 54 percent of potential. The estimated large acreage of ponderosa pine stands that are currently snag deficient, will be managed to provide levels of 40 percent or greater, along with other management areas at even higher rates.

Barring a major natural catastrophe, habitat for old growth dependent wildlife species will remain about the same as is available today (68,900 acres). Species using these areas will be more limited in terms of movement and selection; a large portion of the habitat will be in isolated stands scattered across the Forest.