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1989



Final Environmental Impact Statement

Land and Resource Management Plan

Ochoco National Forest and Crooked River National Grassland

Caring for the Land.

FINAL ENVIRONMENTAL IMPACT STATEMENT LAND AND RESOURCE MANAGEMENT PLANS

Ochoco National Forest Crook, Grant, Harney, and Wheeler Counties, Oregon and Crooked River National Grassland Jefferson County, Oregon

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ABSTRACT

The Final Environmental Impact Statement documents, issues, data and information, analyses, processes for preparation, and potential environmental consequences of management alternatives are presented. The Plans for management of the 844,640-acre Ochoco National Forest and 111,510-acre Crooked River National Grassland are presented also.

Sixteen alternatives were analyzed in the process; six of these are described in detail in the FEIS Each alternative responds differently to the issues and concerns identified

- Alternative NC, No Change, continues management under the 1979 Timber Resource Plan without the full requirements of the National Forest Management Act of 1976 (NFMA)
- Alternative A, No Action, continues management of the Forest and Grassland under existing plans and policies, but has been updated to include NFMA requirements
- Alternative B-Modified is the forest products industry's preferred alternative, it provides for the highest level of timber outputs of any alternative detailed in the FEIS
- The environmentally preferred alternative is described by Alternative C-Modified. It emphasizes resource which do not have market prices (e.g., soil, water, wildlife, recreation, aesthetics)
- Alternative E-Departure was the Draft Preferred alternative. It featured a departure from even-flow to provide a relatively high level of timber output in the first decade, as well as a mix of other resources over time.
- The Final Preferred, Alternative I, is represented by the planning documents issued with the FEIS, and is described in FEIS Alternative I is the result of, and represents, an amalgamation of the public comments and suggestions received on the DEIS and the Supplement to the DEIS, the State of Oregon's involvement, incorporation of new information and legislation, and additional analyses conducted between Draft and Final Alternative I attempts to deal with issues in a reasoned, comprehensive and equitable manner. Options are preserved, critical resources are identified and appropriately protected, and reasonable levels of commodity resources are provided. The Plans are amendable through the NEPA process if future requirements or changes are deemed necessary.

FEIS

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Summary

Summary

Final Environmental Impact Statement for the Land and Resource Management Plan

Ochoco National Forest and Crooked River National Grassland

Purpose and Need

This section is a general summary of the Environmental Impact Statement (EIS). It emphasizes the issues and concerns raised by the public and other local, state and federal agencies, including the Forest Service, regarding management of the Ochoco National Forest and Crooked River National Grassland. It briefly describes the themes of the alternatives and how they were developed, the unavoidable adverse impacts, the irreversible/irretrievable effects of implementation, and the major results of the planning process. The tables show management areas, land uses, and outputs and effects for each alternative. The purpose of the Final Environmental Impact Statement (FEIS) is to describe alternative plans for managing the Ochoco National Forest and Crooked River National Grassland, including the Preferred Alternative I. The FEIS also describes the affected environment and addresses the consequences of implementing the Preferred and other alternatives considered. A Plan representing any of the alternatives would be in effect for 10 to 15 years, unless revised sooner.

In order to implement the forest planning provisions of the National Forest Management Act (NFMA) (36 CFR 219), preparation of an EIS disclosing a range of alternatives, identifying a preferred alternative and disclosing the environmental effects of the proposed action is required by the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ), and NEPA Regulations as stated in Title 40 of the Code of Federal Regulations, Part 1500, (40 CFR 1500). For purposes of disclosure under NEPA, this EIS and the accompanying Forest and Grassland Plans are treated as a combined document.

Preparation of the Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), plus the associated National Forest System Land and Resource Planning Regulations (36 CFR219).

Forest Service planning is a continuous, interactive process (CFR 40 CFR 1508.28) tiered to and carried out on organizational levels within the National Forest System. These levels are:

- 1. National Resource Planning Act Assessment and Program.
- 2. Regional Regional Guide.
- 3. Forest National Forest Land and Resource Management Plans (Forest Plans) for National Forest System lands. Tiered to Regional Guide.
- 4. Project Site or project specific plans, generally at Ranger District level. Tiered to Forest Plan.

Process and Chronology for the Preparation of the Forest and Grassland Plans

Year Process

- 1980 Notice of Intent Published in the Federal Register
- 1981 Preliminary Identification of Issues and Concerns
- 1982 Forest Inventory Completed
- 1984 Analysis of Management Situation
- 1985 Formulation and Analysis of Alternatives Evaluation of Alternatives

Draft Preferred Alternative Selection

- 1986 Draft Environmental Statement Published Public Comment Period
- 1988 Supplement to DEIS Published
- 1989 Public Comment Period for the Supplement Evaluation of Public Comment

Formulation, Analysis and Modification of Final Alternative

Final Plan Published

1990 Plan Implementation, Monitoring and Evaluation

Public Participation

Issue Identification

In the autumn of 1980, the Forest began the task of identifying issues to be addressed in Forest planning. Six meetings with key interest group leaders and individuals were held. In the meetings, 125 preliminary issues, concerns and opportunities (ICO's) were identified. By an iterative process with the public, and through mailings, media, and meetings over the course of several months, these were consolidated into 12 major issues or "planning problems," which are:

- 1. Timber supply and Forest management
- 2. Social and economic wants and needs of local communities
- 3. Livestock grazing or grazing allotments
- 4. Riparian area management
- 5. Transportation planning
- 6. Big game habitat
- 7. Roadless areas (and Wilderness Study Areas)
- 8. Scenic resources
- 9. Old growth forest
- 10. Fuelwood supply
- 11. Snag dependent wildlife
- 12 Winter sports

Public Involvement on the Draft EIS/Plan

The Notice of Availability was published in the Federal Register on September 12, 1986. Over 1,000 copies of the documents were distributed. Each document package contained a "Reviewer's Guide" and "Summary." Over 50 newspaper articles were published, and 20 radio interviews and 39 meetings were conducted on the Draft. The forest products

industry, conservation groups, and snowmobile organizations conducted organized campaigns and information dissemination.

By the end of the 90-day review period, approximately 2,150 responses were received. All responses were acknowledged with reply cards. Over 20,000 comments were coded from the responses.

Summary of Public Comment on the Supplement

The responses received on the Supplement to the DEIS were predominately local in origin. Ninety percent were form letters which came from local mills or mill owners. The form letters stated that they had "no major comments on the Supplement itself," but then went on to repeat issues the mills and timber industry emphasized in the Draft - timber supply and jobs. Over 95% of the comments received on the Supplement did not respond to the issues addressed by the Supplement.

Issue and Public Response Summary

Timber Supply and Forest Management

Major subissues relating to timber supply and forest management have been identified and are discussed separately.

Timber Supply and Sustained Even-flow Yield

Forest products manufacturing is the major industry of the area. Timber accounts for over 95 percent of the National Forest receipts. The Forest has 6.3 Million Board Feet (MMBF) of standing crop. Approximately 50 percent of which is comprised of mature ponderosa pine.

There are 533,177 acres of forest land tentatively identified as suitable for timber production. Of this, the Forest Plan allocates 496,850 acres to the general forest prescription, 92,200 acres to nontimber use such as wildernesses, roadless areas, and old growth, and 255,590 acres in other management areas.

Large fine-grained ponderosa pine is the most commercially valuable tree in Central Oregon. Open park-like stands of mature ponderosa pine are also what people identify the Ochoco National Forest with, and seek out for recreational purposes. Local mills are tooled for large material, although some modification has begun. Ponderosa pine may occur in relatively pure stands, generally on relatively low productivity sites, or associated with other conifer species. The latter are referred to as mixed conifer stands and generally occupy the better sites, but existing mixed conifer stands have a high incidence of insect and disease damage, which reduces value and silvicultural options.

The 1979 Forest Timber Resource Plan established a potential yield of 136.5 MMBF. The programmed harvest for the Forest, under that plan, has been 129.8 MMBF. The present planning effort developed alternative first decade allowable sale quantities in the DEIS ranging from 13.9 MMCF (82 MMBF) to 24.4 MMCF (146 MMBF). (The FEIS ASQ figures range from 15,6 MMCF to 21.9 MMCF.) Three of the DEIS alternatives, including the draft preferred with an ASQ of 123 MMBF, plus an additional 5 MMBF in salvage sales, were departures. Yields or ASQ's exceeding 100 MMBF are not sustainable in board foot measure over time. Because FORPLAN yields were all calculated in cubic feet, the sustained yield in board feet beyond first decade is not readily available in a reliable estimate. The current net annual growth estimated in board feet for the Forest is about 80 MMBF. The harvest on the Forest has been at a historic high, - 153 MMBF in 1985. This high level of harvest was a result of the combination of timber availability and a strong market.

Mill capacity of Crook and Harney Counties alone is estimated to be 385 MMBF annually. Demand for timber currently exceeds supply. The Forest has sold an average of 137 MMBF per annum over the past decade, and cut 110 MMBF, of which 75 percent of the cut volume was large ponderosa pine. Silvicultural systems applied have been predominately evenaged. Intensive timber management and resultant industrial activity on the Forest has potential to conflict with or impact other resources. Conversely, land allocations for other purposes compete with timber interests, and other management requirements can constrain timber management activities and reduce potential yields.

What the Respondents Said

Timber industry wanted an allowable sale quantity of 137 MMBF, which was the original 1979 Timber Resource Plan potential yield. They also asked for at least 100 MMBF of the ASQ to be in ponderosa pine. They attempted to show that the "commercial forest" land base had been decreased through the suitability determinations and other land allocations in the Draft Plan. Timber industry also wanted a larger salvage program. The conservation community, on the other hand, thought the ASQ for the Forest should be about 90 MMBF. Both industry and the conservationists agreed on the desirability of a sustained even-flow yield, but disagreed on the level of yield which was feasible on a sustained basis.

Ponderosa Pine Management

Large ponderosa pine trees are an important forest resource. They are more valuable and important than other species or second growth. Wood product remanufacturing has been increasing and relies on the high quality lumber milled from the pine. This industry is dependent on large pine (20-inch DBH or larger) that is relatively free of knots. Large ponderosa pine is important to the economy of central Oregon. The majority of pine grows on relatively low productivity sites producing less than 58 cubic feet/ acre/year. A quality versus quantity situation exists. Current forestry practices include rapid liquidation of old growth pine stands, even-aged management, and emphasis on fiber (quantity) production. Strategies in the DEIS were designed to produce either maximum cubic foot timber volume on available lands or maximum PNV. These strategies resulted in harvesting stands at 90 to 100 years and producing trees no larger than 14 to 16 inches DBH.

What the Respondents Said

Large ponderosa pine were viewed as a unique product of central Oregon. Small diameter second growth trees were not. The stumpage value of large ponderosa pine is many times greater than second growth. Some segments of the wood products industry would like to know what the supply of pine will be over time in order to plan their business operations. Both industry and other publics do not like evenaged management in ponderosa pine. Both want "selection" harvests, but for different reasons. Intensive management on low productivity pine sites is said not to be appropriate. It was thought that ponderosa pine, because of its uses and the sites involved, should be managed on a board foot (not cubic foot) basis. It was suggested ponderosa pine be inventoried and managed separately, with a separate ASQ established for pine.

Uneven-aged vs Even-aged Silviculture

The use of clearcutting as a silvicultural system on the Forest has increased in the past decade. This is due to implementation of the 1979 Timber Resource Management Plan and prescriptions in mixed conifer that favor more clearcutting and increases in harvest levels as the economy recovered from the recession of the early 1980's. Overstory removal has been applied extensively in ponderosa pine. Clearcut acres under the Draft Plan would start increasing in the second decade as overstory removal opportunities continue to be reduced and management intensity increases.

The harvest methods employed in FORPLAN modeling and yield tables in the Draft Plan and alternatives were based on even-aged management. Uneven-aged management of ponderosa pine appears to be a viable alternative with offsetting advantages and disadvantages. Some limited uneven-aged management was programmed for certain management areas in the Draft Plan.

What the Respondents Said

There was strong support for uneven-aged management by the public and forest industry (albeit, for different reasons) and support for incorporation of uneven-aged management into the Plan. Some publics see overstory removal as clearcutting. Uneven-aged management was perceived as a method to avoid clearcutting (see Clearcutting, this section) and to reduce conflicts with other resources.

Departure

This issue stems from the Plan (Alternative E - Departure) proposal for an ASQ of 123 MMBF in the first decade, declining to 118 MMBF in the second decade, and 89 MMBF by the fifth decade (20.6 MMCF to 16.1 MMCF). This amounts to a 25 percent reduction over 5 decades. The intent of the departure was to maintain a high timber supply to support community stability during the first decade. The issue, however, is more complex because none of the alternatives are sustainable in board feet over time. It is apparent that the current harvest level will decline over time and a decision as to the rate and to what level over time is needed, i.e. a "glide path" or "stepping down."

What the Respondents Said

Neither forest industry nor conservationists liked the idea of departure. Industry said they needed a dependable (and higher) supply of timber, especially to encourage new business to Central Oregon. Conservationists said departure was a euphemism for rapid liquidation of old growth. The public, for the most part, asked for a "sustained yield" which they seem to equate with nondeclining even-flow. Some felt we were remiss in proposing anything but sustained yield (nondeclining even-flow).

Clearcutting

Of the approximately 35,000 to 40,000 acres currently under contract on the Forest, only about 15 percent are to be clearcut. However, the Forest program in near future years contains substantial acreages of clearcutting in mixed conifer stands. The Draft Plan proposed harvesting 1,444 acres (9 percent of total harvested acres), increasing to 2,208 acres (39 percent of total harvested acres) by the year 2030. Root rot and other insect and disease problems, plus slash disposal needs, make any type of partial removal impractical for most of the mixed conifer stands.

What the Respondents Said

There was almost unanimous opposition to clearcutting from industry, conservation groups, and members of the general public. Reasons cited included the adverse effects it has on other resources; the waste of fast-growing, younger stock and potential crop trees; and the destruction of advanced regeneration. The issue was posed as "clearcutting vs. selection." Some publics perceived overstory removal as clearcutting. Clearcutting ponderosa pine was simply not considered appropriate. Acceptance for clearcutting in mixed conifer was conceded by industry. The uneven-aged issue is related to this issue.

Social and Economic Wants and Needs of Local Communities

Central Oregon's economy is primarily based on its natural resources. Employment levels, community stability, ability to attract new industry and maintain the present, have been linked by some to timber supply levels. Our analyses show that the Forest can not continue to concurrently provide the same amount of timber and amenities over time as is currently provided. As a result, there may be socio-economic conflict under any alternative.

The issue is greater than timber supply alone. Other factors, such as remanufacturing, material (log) transport into and out of the area, automation, market conditions, rate of liquidation of old growth, and ponderosa pine management affect jobs, employment levels, county receipts, community stability, and other businesses and industries that contribute significantly to the economic well-being of the communities.

What the Respondents Said

The forest products industry and many individuals were adamant in demanding a high timber supply to maintain the local economy and jobs. Others pointed out the shortsightedness of this viewpoint and suggested that the rapid conversion of old growth and shift to second growth/fiber management might not be positive in the long run. They collectively believe the important resource is large ponderosa pine. Second growth is worth \$40-60/MBF, old growth \$100-300/MBF, so that even if the cut is significantly reduced in order to manage for larger pine, it would contribute more to the economy because of its value, remanufacturing potential, and in the future, possible scarcity. The issue is also interrelated with the departure, uneven-age, and ponderosa pine issues. Still others felt that the high harvest levels would result in the loss of amenity resources that are the reason many people choose to live, work, and recreate in Central Oregon. Nearly all thought that a departure was extremely short-sighted.

Livestock Grazing and Allotment Management

The Forest and Grassland provide summer grazing for about 14,000 cattle and 3,500 sheep, or 75,000 AUM's annually, involving 105 permittees. Changes in public perception about management of the Forest and Grassland in recent years have raised questions of possible conflict between livestock and big game, water quality, riparian conditions, fisheries recreationists and reforestation. Grazing permit administration is tied by law to allotment plans, not the Forest Plan.

What the Respondents Said

Strong criticism was expressed concerning our past performance in administering the grazing program. The public doubts that riparian conditions can be improved and livestock numbers increased simultaneously.

Some said that any significant reduction in livestock grazing would have an adverse effect on the socioeconomic base of Crook, Harney, and Jefferson counties and eliminate currently viable ranching units. Still other respondents suggested that full utilization be made of all available forage.

Some respondents requested that additional data about current conditions be presented and that more detailed descriptions of the impacts of livestock use on other resources be provided.

Riparian Area Management

Approximately 20,040 acres, including 815 miles of

streams, of the Forest and Grassland are considered the riparian influence zone. Riparian areas receive a disproportionate amount of recreation and grazing use. Our most productive timber sites also occur along stream bottoms. Approximately 6,650 acres of riparian area are considered to be in "poor" condition. Public attention for riparian area management and condition is increasing.

The Draft Plan proposed to manage 9,400 acres of streamside to achieve "excellent" conditions. Structural improvements were proposed to enhance these areas as follows: fencing, 255 miles; large woody debris placement, 14 miles; log weir construction, 300 acres, rock structures, 50 acres; and shrub plantings, 50 acres. The remaining 9,600 acres would be managed for "good" or "fair" condition.

What the Respondents Said

The public is concerned about the impact that grazing, timber harvest, and road building has on riparian areas. Of particular concern is the proposed increase in livestock use of forage and skepticism over the Forest's ability to adequately manage riparian vegetation. The view was presented that all riparian areas should be managed in "good" or better condition. There seemed to be a perception that if riparian areas were in "good condition," there would not be much concern over whether the vegetation was used by livestock or not. Some livestock users recommended that where fencing is employed to manage riparian vegetation, the fenced units should be large enough to be managed as riparian pastures; others wanted more specifics on the proposed riparian program.

Transportation System

The transportation system on the Forest and Grassland totaled 4,554 miles of roads in 1985. About 833 miles (18 percent) are maintained for passenger car use, with the remainder maintained for high clearance vehicles. In the past, roads were constructed to relatively high standards. Recently, economic pressures and more rigorous analysis led the Forest Service to adopt lower road standards.

Under the Draft Plan, the number of miles of road

maintained on the Forest and Grassland would decrease nominally in the future. Roads would be closed when needed to protect soil and water, prevent disturbance of big game, and limit investment loss. Closures could be seasonal or yearlong.

What the Respondents Said

There is strong opinion that the road standards and road density are too high. Seasonal road closures for protection of big game, and road closure after completion of timber sales are generally supported by the public.

The timber industry suggested that the conflicts between roads and big game result from roads being open to use, rather than roads per se. They contend that the needs of big game could be served as well by closing roads as by leaving areas roadless.

Big Game Habitat

The Oregon Department of Fish and Wildlife (ODFW) assigned planning benchmarks of 2,600 elk and 22,600 deer to the Forest and Grassland. The Forest and Grassland have potential habitat to support larger populations of big game than these objectives.

The Draft Plan proposed management for big game habitat would be the primary emphasis on 227,700 acres (approximately 25 percent) of the Forest and Grassland. In these areas, open road density and cover would be managed for high quality big game habitat.

What the Respondents Said

The public desired a larger big game population than what the Draft Plan allowed. They would like more seasonal and permanent road closures. They felt all of the big game winter range should be managed for that purpose, and an increase in the cover-forage ratios for general forest should be made.

Roadless Areas and Wildness Study Areas

The Draft Plan proposed managing Cottonwood Creek, most of Rock Creek, part of Silver Creek, and a small portion of Lookout Mountain for semiprimitive nonmotorized recreation (25,249 acres total). Green Mountain (7,000 acres) was proposed to be managed for semiprimitive motorized recreation.

The Oregon Wilderness Act of 1984 required the Forest Service to review the Deschutes Canyon-Steelhead Falls Wilderness Study Area (WSA) and make a wilderness recommendation in the Forest Plan. The Draft proposed a 5,200-acre wilderness (2,500 acres National Grassland, 2,660 BLM). The total WSA was 18,402 acres. Also, the portion of the Deschutes River flowing through the wilderness study area was being studied for classification under both state and federal wild and scenic river systems. The North Fork Crooked River WSA (1125 acres) was identified as being part of a larger area over which the BLM had the lead.

What the Respondents Said

Public response on this issue was very polarized. Many of those favoring maintaining areas as unroaded on the Forest requested that acreage in each be increased over what was proposed in the Draft Plan. Lookout Mountain was most strongly supported to remain roadless, followed by "Ochoco Canyons," Rock Creek and Cottonwood Creek areas.

Those opposing roadless area management for recreation cited single-use management as the basis for their opposition, and grouped roadless areas with what they felt were other single-use areas, i.e. wilderness, research natural areas, and old growth.

Those commenting on the Deschutes Canyon-Steelhead Falls WSA favored expanding the wilderness to include more area if it was to be recommended as wilderness. There were few comments received on the North Fork Crooked River WSA.

Scenic or Visual Resources

The Draft Plan proposed managing 3,000 acres in the Bandit Springs area and a 7,000 acre area encompassing Crystal Creek, Walton Lake, Round Mountain, Lookout Mountain, Mount Pisgah, and East Point to protect the natural appearance of the landscape. Scenic corridors proposed totalled 52,000 acres, or about 50 percent of the potential roadside viewing of 106,700 acres.

What the Respondents Said

There were relatively few comments from the public on this issue. Most comments favored retaining Highway 26 as a scenic corridor. Some people felt that scenic corridors were just another means of reducing the timber base. The State of Oregon expressed strong concern about maintaining the visual character of the Ochoco Forest over time.

Old Growth Forest

The Draft Plan proposed to provide 26,400 acres specifically allocated (dedicated) to old growth management. Approximately 23,500 more acres of old growth were thought to be available in wilderness and unroaded areas.

The size and distribution of the areas managed for old growth habitat were designed to meet habitat requirements for the pileated woodpecker, a management indicator species.

What the Respondents Said

A great majority of those responding desired a larger allocation for old growth. Some also expressed interest in preserving old growth juniper habitat.

Fuelwood Supply

The Forest currently supplies about 10,000 cords of fuelwood per year. This is expected to decrease after a few decades as harvesting is done in younger stands. There is a large amount of material currently not used because of poor access (distance from road, distance from town) and because of small size. The availability and location of fuelwood is directly related to the timber sale program. Fuelwood gathering often conflicts with leaving adequate number of snags for wildlife.

What the Respondents Said

The people who use fuelwood for heating (which includes a majority of local residents) favored the continued availability or increase in availability of fuelwood.

Snag Dependent Wildlife

The Draft Plan proposed providing 55 percent of the potential snag habitat. Snag levels vary by management area, ranging from 40 percent in areas managed for timber production to 100 percent in wilderness and roadless areas. Fuelwood cutting and timber sales may not be leaving adequate supplies of snags.

What the Respondents Said

Most of the respondents on this issue wanted snags reserved for wildlife. There was concern that the Forest Plan did not adequately protect snag habitat and that too many snags would fall prey to woodcutters and commercial timber sales. Conversely, timber industry strongly requested an expanded salvage program, which could conflict with leaving snags or snag replacement efforts.

Winter Sports

At present, most of the Forest, except for the crosscountry ski trails at Bandit Springs, is open to winter recreation, including snowmobiles. The Draft Plan proposed closing the summit of Lookout Mountain (3,000 acres) to snowmobiling.

The greatest limitation to winter recreation on the Forest is the lack of access, which at present is provided almost entirely by roads plowed to access timber sales.

What the Respondents Said

The proposal to close Lookout Mountain to snowmobiling was strongly opposed by snowmobilers. This appeared to be the major issue concerning winter sports that surfaced in the public comments. In contrast, there was little support by cross-country skiers for closing Lookout Mountain, or other areas of the Forest, to snowmobiling. Staff observations of winter use of Lookout Mountain indicate that the conflict between skiers and snowmobilers is normally minimal, and that at present use levels both uses can be accommodated in the area. One suggestion was that separate trails for skiers and snowmobilers to the top of Lookout Mountain be provided.

Additional Issues Not Identified in the Original ICO's

Anadromous Fish

Anadromous fish were not identified as an issue in development of the DEIS and Proposed Forest Plan. Anadromous fish were identified as a concern by several individuals and groups, including a lengthy, technical response from the Columbia River Inter-Tribal Fish Commission (CRITFC). Primary concerns included protection and enhancement of spawning habitat, and the adequacy of the monitoring schedule. Native American groups noted that treaties guarantee protection for anadromous fish habitat.

Historic Trail Preservation-Summit Trail

This management concern developed out of a separate study conducted during the interim between issuance of the DEIS/Plan and Final. The Forest coordinated with the State Historic Preservation Office (SHPO) on details contained in the Final. This trail has been related also to other groups' proposals for an east-west intertie for a cross-state trail system.

Off-Road Vehicle (ORV) Use

This issue re-emerged during the issue validation phase for the Final Plans. It was not an issue of Forest-wide perspective in the Draft Plan phase. It was addressed in the Travel Plan.

Round Mountain

The Oregon Natural Resources Council in comment on the Draft Plan asked that a recreation unit be established for the Round Mountain area. This issue was brought up again by one individual in the validation process and addressed as part of the multiple use decisions.

Validation of Public Participation Process

Incorporation of public involvement into the deci-

sions being reached in the final Forest and Grassland Plans has been an integral step in progressing from the Draft documents released in September 1986. Significant steps were taken during the last four months of final document preparation to insure that direction in the final plans responded accurately to comments received on the Draft. In response to public comment, new information, and legislation significant changes were made in the preferred alternative between Draft and Final. Concurrently, with the alternative modification, the Forest Service worked closely with the public in attempting to validate and/or seek "consent" for the Final Plan. During recent months, 39 meetings with more than 289 key individuals involving more than 70 interest groups or agencies were conducted. A video was developed on uneven-aged management in ponderosa pine and widely viewed and distributed. This networking and collaboration has laid a strong foundation for Plan implementation.

Summary of Changes Between the Draft and Final Preferred Alternative

- 1. The Forest and Grassland are treated in separate Plans.
- 2. The land and resource allocations are more refined - there are sixteen management areas in the Grassland Final, compared to eight in Draft; the Forest has twenty-eight in the Final, compared to fourteen in the Draft. (See Chapters 4, Forest and Grassland Plans.)
- 3. The additional management areas above primarily represent additional allocations for wildlife and recreation. (See Tables 2 and 3, this summary; and Chapter 4, Forest and Grassland Plans.)
- 4. Timber management in the Final is based on

sustained even-flow with an ASQ of 19 MMCF (115 MMBF 1st decade), compared to Draft which had a departure from even-flow with an ASQ of 20.6 MMCF (123 MMBF 1st decade) declining to 16.1 MMCF in the 5th decade. (See Table 2-8, Chapter 2, FEIS; and Timber Goals and Objectives, Chapter 4, Forest Plan.)

- 5. The Draft was based primarily on even-aged silviculture, the Final incorporates 100,000 acres of uneven-aged management in ponderosa pine and in the general forest (MA-F22), and additional opportunities, for example, within visual corridors. (See Chapter 2 and Appendix E, FEIS. Also see Standards and Guidelines, Chapter 4, Forest Plan.)
- 6. Larger rotation diameters are established for ponderosa pine (18" even-age, 20" uneven-age vs. 14-16" in the Draft.) (See Standards and Guidelines, Chapter 4, Forest Plan.)
- 7. Updating of FORPLAN model with new prescriptions, yield streams, yield tables, and condition classes. (See Appendix B.)
- 8. Economic analysis revised to reflect new information, schedules, allocations, assumptions, and additional resources such as mineral leases and anadromous fish. (See Appendix B.)
- 9. Segments of North Fork Crooked River, Deschutes River and Crooked River formally classified under the Oregon Rivers Act, as compared to Draft where their eligibility was reported. An eligibility and suitability analysis has been completed for a 1,370 acre segment of Lower Squaw Creek from the Grassland boundary to its confluence with the Deschutes River. Alternatives B-Modified and I indicated that this segment of Lower Squaw Creek be recommended to Congress for designation as a "scenic river" in the Wild and Scenic River System. (See Chapter 4, Section 2, Forest Plan.)
- 10. A 5,200 acre wilderness area was proposed in the Draft for the Deschutes Canyon-Steelhead Falls Wilderness Study Area (WSA); in the Final no wilderness is recommended. Instead, a 7,840 acre semiprimitive nonmotorized

area is established. Part of the WSA is included in the classified Deschutes Scenic River corridor. (See Chapter 4, Section 3, Forest Plan.)

- 11. The Draft recommended 38,710 acres of roadless area remain unroaded; the Final recommended 39,730 acres. Green Mountain was proposed for semiprimitive motorized recreation in Draft, and was allocated to multiple use (General Forest, MA-F22) in the Final. The Rock Creek/ Cottonwood Creek area to be managed as roadless in the Draft was decreased some. Silver Creek remained essentially the same. Lookout Mountain was planned for 2,930 acres to remain unroaded in the Draft, and is treated as a 15,660 acre management area emphasizing semiprimitive, nonmotorized recreation (7,550 acres) and recreation and wildlife (8,110 acres) with no scheduled timber harvest in the Final. (See Chapter 4, Forest Plan.)
- 12. Additional emphasis is placed on visual and scenic resources in the Final. An additional 18,080 acres are assigned the visual quality objective of partial retention or greater in the Final. (See Standards and Guidelines, Chapter 4, Forest Plan.)
- 13. Dispersed recreation sites are identified and recognized as an allocation in the Final; they were not in the Draft. (See Standards and Guidelines, Chapter 4, Forest Plan.)
- 14. Additional areas with special features or recreational attractions were allocated in the Final that were not in the Draft (e.g. Stein's Pillar, Deep Creek, Lookout Mountain). (See Chapters 4, Plans.)
- 15. Lookout Mountain (MA-F11) remains open to snowmobiles in the Final; in the Draft it was proposed to be closed. (See Chapter 4, Section 2, Forest Plan.)
- 16. Developed recreation sites, not included in the Draft, are incorporated into the Final (e.g. Cove Palisades, Haystack). (See Chapter 4, Section 2, Grassland Plan)
- 17. Areas emphasizing wildlife not included in the Draft are incorporated into the Final (eg,

Hammer Creek, eagle roosting sites, Rimrock Springs). (See Chapters 4, Sections 2 to 3, Forest and Grassland Plans.)

- 18. The old growth allocations were changed between the Draft and Final. The old growth identified in the Final is comprised of 95 percent "suitable" stands, compared to 58 percent "suitable" in the Draft, although about 5,000 acres less are dedicated. Old growth juniper is allocated on the Grassland, it was not in the Draft. (See MA-F6, MA-G5, Chapters 4, Sections 2, Forest and Grasslands Plans.)
- 19. The acreage of winter range allocated for big game stayed the same, with the exception of antelope winter range on the Grassland which was increased; improved spatial distribution of the winter range area was done in the Final. Another allocation representing potential winter range (MA-F21) was identified in the Final. (See Chapters 4, Section 2, Forest and Grassland Plans.)
- 20. No allocations were made for summer range in the Final, as compared to the Draft which allocated 154,100 acres for big game summer range. Habitat requirements for big game are considered throughout the Forest and Grassland management areas as specified in the standards and guidelines in Chapters 4.
- 21. Road density objectives are changed in the Draft they were two mi/section on winter range and four mi/section in the timber/range emphasis; in the Final they range from one mi/section on winter range (seasonally) to three mi/ section on general forest. (See Standards and Guidelines, Chapters 4, Forest and Grasslands.)
- 22. Cover guidelines for elk and deer were changed to reflect natural vegetation capabilities and patterns; more emphasis is placed on mixed conifer for cover. Modeling assumptions for calculating habitat effectiveness were changed. (See Appendix B, FEIS, and Standards and Guidelines, Chapter 4, Forest Plan.)
- 23. Forage utilization standards for domestic livestock grazing have been standardized by the Region in the Final. A system for prioritizing

range allotment planning needs and riparian improvements is established specifically by grazing allotment in the Final, as compared to a general forest approach involving water developments in the Draft. (See Standards and Guidelines, Chapters 4; and Appendices A, Forest and Grassland Plans.)

- 24. All streamsides will be managed for excellent conditions, compared with the Draft which had two riparian prescriptions. A travel plan is developed in the Final reflecting the land allocations and management direction, compared to the Draft where all areas were open unless otherwise identified. (See Appendix D's; MA-F15 and MA-G9, and Standards and Guidelines, Sections 2 and 3, Chapters 4, Forest and Grassland Plans.)
- 25. Utility corridors, minerals and land adjustments are addressed more specifically in the Final, than in the Draft. (See Chapters 4, Forest and Grassland Plans.)
- 26. A Summit National Historic Trail (MA-F7) has been identified and incorporated into all alternatives. Anadromous fish, ORV's and Round Mountain are additional issues identified in the Final, not shown in the Draft. (See Chapter 2, FEIS; and Chapters 3, Forest and Grassland Plans.)

Affected Environment

The land administered by the Ochoco National Forest occupies 844,640 acres within Crook, Harney, Grant and Wheeler Counties. The Crooked River Grassland contains 111,510 acres in Jefferson County. Total population of a six county area, which includes those above plus Deschutes, is approximately 105,000. The area's economy is highly dependent on forest related industry, government agencies, agriculture, recreation and tourism.

The Ochoco, which in the language of the Paiute Indian means "wind in the willow," is characterized by park-like stands of old-growth ponderosa pine intermingled with mountain meadows. The Ochoco and Maury Mountains, where the Forest occurs, range from 2,200 feet to over 7,000 feet in elevation. The Forest is drained by the Crooked and John Day Rivers. The National Grassland consists of high lava plains, canyons, and volcanic buttes and is drained by the Deschutes River.

For more detailed information the reader is referred to FEIS Chapter 3.

Alternatives Including the Proposed Action

Based on public issues, management concerns and the natural resources involved, the Forest formulated and analyzed 11 implementable alternatives, and eight benchmark alternatives in the DEIS. In addition, a "no change" alternative was presented in a Supplement to the DEIS. As a result of the public response to these alternatives, new information, and legislation, all but three of the above alternatives were dropped in the Final, two were modified, and a new alternative was created. The latter, Alternative I, is the preferred alternative. The status of the alternatives generated in the planning process is displayed in Table S-1. Thus a total of 15 alternatives were fully developed, analyzed and evaluated over the course of the planning process in arriving at the selection of the preferred final.

An analysis of the requirements of NFMA which are

incorporated into alternatives was completed. Alternative ways of meeting the management requirements were analyzed and opportunity costs are given in Appendix F.

Preferred Alternative

The preferred Alternative I is represented by a combination of management areas (allocations) that reflect public comment, new information and recent legislation. The National Forest and Grassland are listed separately.

Management Area Allocations

The preferred alternative establishes land allocations which apply to specific uses, resource considerations, natural features or legislatively designated areas. The allocations are mapped as Management Areas (see Alternative I map) and have had preliminary ground truthing. Specific standards and guidelines (prescriptions) have been developed for each management areas.

The management area allocations for the Forest and Grassland are summarized (by resource emphasis) in Tables S-2 and S-3, and they are presented in more detail in Tables S-4 and S-5. Objectives and desured future condition have been described by management area in Chapters 4, Forest and Grassland Plans.

The grouping of management areas for modeling and prescriptions is discussed in Appendix B and Chapter 2 of this FEIS, and summarized on page S-18.

TABLE S-1

DISPOSITION OF ALTERNATIVES CONSIDERED IN THE FINAL

								AL	TERNA	TIVES						
TREATMENT	A	В	B Dep	B Mod 1/	С	C Mod	D	E	E Dep	F	G	H	H Dep	l Pre 2/	NC	CD BNCH 3/
Detailed Alts in DEIS DEIS Alts Detailed in FEIS DEIS Alts Eliminated in FEIS New Alts Detailed in FEIS	x x	x x	x x	x	x x	x	x x	x x	x x	x x	x x	x x	x x	x	x x	X X

/1 Alternative B-Mod represents evolution and change of Alternative B-plus proposed by timber industry Alternative B-Mod is a new industry alternative It is different than B-Departure in the draft, the latter of which was much the same as Alternative B

/2 Preferred Alternative I

/3 Current Direction Benchmark with National Forest Management Act (NFMA), Alternative A in this FEIS

RESOURCE EMPHASIS	# MGMT AREAS	ACRES	% OF FOREST
TIMBER/FORAGE	2	499,330	59%
WILDLIFE	3	174,620	21%
OLD GROWTH	1	19,250	2%
RECREATION	10	48,350	6%
SCENIC/VISUAL	3	40,110	5%
WILDERINESS	4	37,330	4%
RIPARIAN	1	18,130	2%
RESEARCH	1	4,400	<1%
WILD & SCENIC	2	2,660	<1%
FACILITIES	1	460	<1%
TOTAL		844,640	

TABLE S-2 RESOURCE EMPHASIS BY ACRES AND % OF FOREST

TABLE S-3

RESOURCE EMPHASIS BY ACRES AND % OF GRASSLAND

RESOURCE EMPHASIS	# MGMT AREAS	ACRES	% OF FOREST
RANGE/FORAGE	1	59,440	53%
WILDLIFE	3	35,870	32%
RECREATION	4	9,400	10%
RESEARCH	1	110	<1%
RIPARIAN	1	2,110	2%
SCENIC/VISUAL	1	560	<1%
WILD & SCENIC	2	2,740	<1%
OLD GROWTH	1	740	<1%
FACILITIES	2	540	<1%
TOTAL		111,510	

TABLE S-4 CROOKED RIVER NATIONAL GRASSLAND MANAGEMENT AREAS

Management Area	Acres	% Total	Resource Emphasis
MA-G1 Antelope Winter Range	22700	20	Wildlife
MA-G2 Metolius Deer Winter Range	12740	11	Wildlife
MA-G3 General Forage	59440	53	Range
MA-G4 Research Natural Areas	110	<1	Research
MA-G5 Juniper Old Growth	740	1	Wildlife
MA-G6 Crooked River Recreation River	720	1	Wild/Scenic River
MA-G7 Deschutes River Scenic Corridor	650	1	Wild/Scenic River
MA-G8 Squaw Creek	7840	7	Recreation/Wildlife
MA-G9 Riparian	2110	2	Riparian
MA-G10 Rimrock Springs Wildlife	430	<1	Wildlife
MA-G11 Haystack Reservoir	150	<1	Recreation
MA-G12 Cove Palisades State Park	2690	2	Recreation
MA-G13 Lake Billy Chinook View	560	1	Visuals
MA-G14 Dispersed Recreation	90	<1	Recreation
MA-G15 Gray Butte Electronic Site	80	<1	Facilities
MA-G16 Utility Corridors	460	<1	Facilities
TOTAL GRASSLAND ACRES	111510	100	

Allocations and Resource Emphasis By Area

TABLE S-5 OCHOCO NATIONAL FOREST MANAGEMENT AREAS

Allocations and Resource Emphasis By Area

Management Area	Acres	% Total	Resource Emphasis
MA-F1 Black Canyon Wilderness	13400	2	Wilderness
MA-F2 Bridge Creek Wilderness	5400	<1	Wilderness
MA-F3 Mill Creek Wilderness	17400	2	Wilderness
MA-F4 North Fork Crooked River Wilderness Study Area	1125	<1	Wilderness

Management Area	Acres	% Total	Resource Emphasis
MA-F5 Research Natural Areas	4400	<1	Research
MA-F6 Old Growth 1/	19250	2	Wildlife
MA-F7 Summit National Historic Trail	9560	1	Recreation
MA-F8 Rock Creek/Cottonwood Creek	11820	1	Recreation
MA-F9 Rock Creek/Cottonwood Creek Unroaded-Helicopter	2480	<1	Timber/Range
MA-F10 Silver Creek Area	3110	<1	Recreation
MA-F11 Lookout Mountain Recreation	15660	2	Recreation
MA-F12 Eagle Roosting Areas	570	<1	Wildlife
MA-F13 Developed Recreation	1810	<1	Recreation
MA-F14 Dispersed Recreation	1970	<1	Recreation
MA-F15 Riparian	18130	2	Riparian
MA-F16 Bandit Springs Recreation	1580	<1	Recreation
MA-F17 Stein's Pillar Recreation	1070	<1	Recreation
MA-F18 Hammer Creek Wildlife/ Recreation	2560	<1	Wildlife
MA-F19 Deep Creek Recreation	770	<1	Recreation
MA-F20 Winter Range	64130	7	Wildlife
MA-F21 General Forest Winter Range	107360	12	Timber/Wildlife
MA-F22 General Forest	496850	59	Tımber/Range
MA-F23 North Fork Crooked River Recreation Corridor	1830	<1	Recreation
MA-F24 North Fork Crooked River Scenic Corridor	830	<1	Recreation
MA-F25 Highway 26 Visual Corridor	6850	<1	Visuals
MA-F26 Visual Management Corridors	33260	4	Visuals
MA-F27 Round Mountain National Recreation Trail	1000	<1	Recreation
MA-F28 Facilities	460	<1	Facilities
TOTAL FOREST ACRES	844640	100	

1/ Includes 8 old growth units within wilderness, unroaded, and WSA

Summary of Management Area Groupings and Prescriptions for Modeling the Preferred Alternative Management areas were grouped in the modeling (FORPLAN) process and prescriptions for forest management assigned as shown below.

Group I

92,200 Acres - 11% No scheduled treatment

MA-F1	Black Canyon Wilderness
MA-F2	Bridge Creek Wilderness
MA-F3	Mill Creek Wilderness
MA-F4	N.F.C.R. Wilderness Study
MA-F5	RNA's
MA-F6	Old Growth
MA-F7	Summit Trail (preservation)
MA-F8	Rock Creek/Cottonwood Creek Unroaded
MA-F10	Silver Creek Unroaded
MA-F11	Lookout Mountain
MA-F28	Facilities

Group II

18,130 Acres - 2% Silviculture - Even- or uneven-aged Rotation Age - 200 years Diameter 20"+ Average annual cu.ft. volume - 0.2 MMCF

MA-F15 Riparian

Group III

3,240 Acres - less than 1% Silviculture - Even- or uneven-aged Rotation age - 300 years Diameter 30" Average annual cu.ft. yield - <0.1 MMCF

MA-F12 Eagle RoostingMA-F17 Stein's PillarMA-F19 Deep CreekMA-F24 N.F.C.R. Scenic River

Group IV

28,110 Acres - 3% Silviculture - Even- or uneven-aged Rotation age - Pine 250 years, mixed conifer 200 years

Average annual cu.ft. yield - 0.6 MMCF

- MA-F7 Summit Trail(retention)
- MA-F13 Developed Recreation
- MA-F14 Dispersed Recreation
- MA-F16 Bandit Springs
- MA-F25 Hwy 26 Corridor
- MA-F26 Visual Management retention
- MA-F27 Round Mountain National Recreation Trail

Group V

32,140 Acres - 4% Silviculture - Even- or uneven-aged Rotation age - Pine 200 years, mixed conifer 150 years Diameter - Pine 27", mixed conifer 22" Average annual cu.ft. yield - 0.7 MMCF

MA-F7 Summit Trail (partial retention)
MA-F18 Hammer Creek
MA-F23 N.F.C.R. Recreation River
MA-F26 Visual Management (partial retention)

Group VI

64,130 Acres - 8% Silviculture - Even-aged Rotation age - Pine 125 years, mixed conifer 90 years Diameter - Pine 16", mixed conifer 15" Average annual cu.ft. yield - 0.9 MMCF

MA-F20 Winter Range

Group VII

606,690 Acres - 72% Silviculture - Even- or uneven-aged Rotation age - Pine 130 years, mixed conifer 90 years Diameter - Pine 18", mixed conifer 16" (unevenaged 20") Average annual cu.ft. yield - 16.6 MMCF MA-F9 Rock Creek/Cottonwood Creek Helicop-

ter MA-F21 General Forest Winter Range

MA-F22 General Forest

Summary Description of Final Alternatives

Alternative NC -NO CHANGE

The "No Change" alternative has been developed as a no-action alternative representing current management plans. It provides for a level of goods and services as defined in unit plans and the 1979 Timber Resource Plan. The alternative does not comply with all provisions of the National Forest Management Act (NFMA), and could not be implemented or used in future management of the Forest without Congressional and/or Secretary of Agriculture action to change the law (see Supplement to the DEIS).

Alternative A -NO ACTION (Current Direction Benchmark in Table 1)

This is the "no action" alternative required by the National Environmental Policy Act. It would continue the present course of action established in plans and policies formulated and approved prior to passage of the NFMA and have been made consistent with present laws and regulations. Relatively high levels of timber production, combined with visual quality objectives, and moderate levels of fish and wildlife, are emphasized in this alternative. In the Draft this alternative was represented by the "Current Direction Benchmark with NFMA."

Alternative B-Modified -FOREST PRODUCTS INDUSTRY PREFERRED

This is the alternative supported by the forest products industry. Alternative B-Modified evolved from Alternative B, B-plus post-Draft discussions and Alternative I. Alternative B-mod. was developed by industry by amalgamating selected aspects of Alternative I with Draft B. The intent is to provide a high level of timber output with some considerations for other resources.

Alternative C-Modified -HIGH AMENITY VALUES

Alternative C emphasizes resources associated with amenity values. For example, riparian areas, scenic corridors, retention of roadless areas, recreation and forest management designed to provide big game habitat. Old growth and snags would also be provided at high levels. Timber and range resources would be managed at comparatively low levels. This is generally the alternative supported by the conservation community.

Alternative E - Departure - DRAFT PREFERRED

Alternative E-Dep was the Draft preferred alternative. It emphasizes a combination of timber production, roadless recreation, and big game habitat. Timber is scheduled as a departure from nondeclining yield. In other respects, this alternative is based upon, and is the same as Draft Alt. E. Timber harvests are scheduled so that first decade volumes remain close to current levels, and then decline over the next 10 to 50 years. The departure is designed to maintain local economic conditions for the short term. All resources are managed or maintained at least at moderate levels.

Alternative I -FOREST SERVICE FINAL

This alternative represents a new alternative evolved from E-Dep., the Draft Preferred Alternative, in response to new information, recent legislation, and public comment. It is the agency's preferred final. This alternative seeks to maintain a reasonably high level of commodity outputs on a sustained, nondeclining flow. In a complimentary and equitable manner it has also attempted to provide wildlife habitat and recreation resources, as well as preserving the character or setting of the Forest and Grassland over time. Alternative I differs from the Draft preferred E-Departure as noted in the summary of changes between the Draft and Final discussion on pages S-11 through S-13.

Figures S-1 through S-12 and Tables S-6 through S-9 present summary comparisons between alternatives for resource allocations, outputs, and economics.



















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TABLE S-6 RESOURCE EMPHASIS ACREAGES BY ALTERNATIVE

	ALTERNATIVES					
Emphasis	B-Mod	E Dep	l Preferred	A	C-Mod	
Wilderness	37,325	39,825	37,325	37,325	47,325	
Research Natural Areas	2,145	4,800	4,510	2,230	4,860	
Old Growth	18,740	26,340	19,990	36,970	45,030	
Cultural	0	0	9,560	0	0	
Unroaded Recreation	17,130	27,315	37,060	31,200	40,960	
Eagle Roosting	570	570	570	570	570	
Developed Recreation	4,650	750	4,650	750	750	
Dispersed Recreation	2,060	0	2,060	0	0	
Riparian Excellent	18,930	8,260	20,240	3,850	15,550	
Riparian Acceptable	0	7,630	0	12,210	0	
Special Recreation	3,420	1,580	11,530	0	1,580	
Special Wildlife	430	0	2,990	0	0	
Big Game Winter Range	35,440	72,310	99,570	32,100	308,150	
Big Game Summer Range	0	154,100	0	61,830	378,775	
Tımber/Wıldlıfe	171,490	0	107,360	0	0	
Timber/Range	603,010	555,020	556,290	649,170	0	
Wild & Scenic Rivers	5400	4030	5400	4030	4030	
Visuals	34,410	46,160	41,670	83,450	101,110	
Facilities	1,000	460	1,000	460	460	

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Emphasis	Applicable Management Areas
Wilderness	D8, F1, F2, F3, F4
RNA's 1/	D12, F5, G4
Old Growth	D4, F6, G5
Cuitural	F7
Unroaded Recreation	D9, G8, F8, F10, F11
Eagle Roosting	F12
Developed Recreation	D11, F13, G11, G12
Dispersed Recreation	D9, D10, F14, G14
Riparian Excellent	D14, F15, G9
Riparian Acceptable	D13
Special Recreation	F11B, F16, F17, F19
Special Wildlife	G10, F18
Big Game Winter Range	D2, F20, G1, G2
Big Game Summer Range	D3
Tımber/Wıldlıfe	F21 (F20 for B-Mod)
Timber/Range	D1, F22, G3
Wild & Scenic Rivers 2/	F23, F24, G6, G7, G8 (that portion of Squaw Creek being recom- mended)
Visuals	D5, D6, D7, G13, F25, F26, F27
Facilities	F28, G15, G16

TABLE S-6 CONTINUED, ACREAGE DOCUMENTATION

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1/ RNA acreage totals are derived from the final management area mapping and R-2 data base acreage calculations RNA boundaries were slighty modified from the DEIS to the FEIS and consequently the total acreage for the final does not exactly track with that from the DEIS and the discussion of RNA's in Chapter 3 of the FEIS

2/ An eligibility and suitability evaluation has been made for Squaw Creek. A recommendation and interim management guidance for a Wild and Scenic River designation has been made in Alternative B Modified and I For those alternatives, 1,370 of unroaded recreation emphasis has been deleted and added to the Wild and Scenic River emphasis

TABLE S-7 INDICATORS OF RESPONSIVENESS OF ALTERNATIVES TO ISSUES, CONCERNS, AND OPPORTUNITIES

		ALTERNATIVE					
Resource Output or Item	Unit of Measure	NC	B-MOD	E DEP	I-Preferred	A	C-MOD
Allowable Sale Quantity (ASQ) 1st Decade 5th Decade 1st Decade	MMCF MMCF MMBF	N/A N/A N/A	21 8 21 8 130 0	20 6 16 1 123 0	190 190 1150	193 193 1150	15 6 15 6 94 0
Average Annual Salvage	MMBF		8	15	7	14	6
Uneven-Age Mgmt	M Acres	0	120	0	100	0	170
PNV	Million \$	380	452	471	475	421	395
Estimated County Receipts	M \$'s	Un- known	49	51	49	43	35
Estimated Change in Jobs	#	Un- known	176	196	118	57	-101
Livestock Use 1st Decade 5th Decade	M AUM's/Yr	77 5 77 5	70 0 80 0	79 0 79 4	70 0 80 0	77 5 79 1	73 1 74 4
Riparian Areas in Excellent Condition 1st Decade 5th Decade	M Acres M Acres	 5 4	10 0 17 5	 9 4	10 0 17 5	 5 4	10 0 17.5
Miles of Primary Road Open and Maintained -End of Planning Period	#Miles	4774	4800	4776	4734	4774	4743
Miles of Roads Closed 1st Decade 5th Decade	#Miles	694 1734	913 2123	890 2082	1558 2185	694 1734	1520 3224
Deer Population 5th Decade	#	Un- known	17,210	22,600	22,600	22,600	22,600
Elk Population 1st Decade 5th Decade	#	Un- known	3210 1700	3170 2780	3000 2620	3370 2690	3740 3700
Acres Aliocated-Unroaded 1/	M Acres	29 1	10 7	27 3	38 4	31 2	41 0

Resource Output or Item	Unit of Measure	NC	B-MOD	E DEP	I-Preferred	A	C-MOD
Scenic Resources Preservation Retention Partial Retention Allocated 2/	M Acres M Acres M Acres 71 4 M Acres	38 3 102 2 28 1	39 5 60 7 59 4 34 4	43 3 70.7 32 4 46 2	42 0 96 8 71 4 41 7	38 3 102 2 61 5 83 5	50 9 155 6 101 1
Old Growth (Allocated) 3/	M Acres 32,860		18,740	26,340	19,996	36,970	45,030
Fuelwood Supply 1st Decade	M Cords	14 0	15 0	13 1	13.0	14 0	120
Snag Habitat for Cavity Nesters 1st Decade 5th Decade	% of Po- tential	Un- known Un- known	43 33	- 46 55	47 54	46 52	51 69
Area Allocated To Recre- ation Emphasis 4/	Acres		28,630	35,065	58,120	31,950	48,710
Anadromous Steelhead 1st Decade 5th Decade	SHCI 5/ (M Smolt)	121 220	121 220	121 220	121 220	121 220	121 220
Total Miles of ATV Trails 1st Decade 5th Decade	#Miles	None None	95 190	0	95 190	0 0	95 190
Round Mountain Recreation Emphasis 6/	Acres	N/A	1,000	0	1,000	0	D

1/ Total acreage for lands allocated to management areas with unroaded recreation emphasis (D9, F8, F10, F11, G8)

2/ Total acreage for lands allocated to management areas with visual resource emphasis (D5, D6, D7, G13, F25, F26, F27)

3/ Total acreage for lands allocated to management areas with old growth emphasis (D4, F6, G5)

4/ Total acreage for lands allocated to management areas with recreation emphasis (D9, D10, D11, F7, F8, F10, F11, F13, F14, F16, F17, F19, G8, G11, G12, G14)

5/ SHCI. Steelhead Habitat Capability index, thousands of smolt

6/ Acres on Round Mountain with recreation emphasis (applies to Round Mountain National Recreation Trail)

TABLE S-8
COMPARISON - PAST, PRESENT, AND ALTERNATIVE TIMBER OUTPUTS 1/
(First Decade Volumes in MMBF)

	ACT		EXISTING	A L T E R N A T I V E S PLANNED VOLUME BY ALTERNATIVE FOR FIRS			R FIRST DEC	RST DECADE	
	Sold	Cut	P A.H 2/	NC	B-MOD	E DEP	I I	A	C MOD
SAWTIMBER (Chargeable) Green sales (ASQ)3/ Est. pine volume 4/ Salvage sales	136 9 109 1 Include	111 6 87 5 above	127 1 95 2.7	127 1 95 2.7	130 85 4	123 97 5	115 82 4	115 79 4	94 65 3
SALVAGE SALES & SAWTIMBER (Est. percent change in next five decades) 6/	136 9 5/	111 6	129 8	129 8	134 (-7)	128 (-30)	119 (-10)	119 (-10)	97 (-10)
SAWTIMBER (Nonchargeable) negligable in existing or planned program	0	0	0	0	0	0	0	0	0
SUBMERCHANTABLE (Post, poles, cull)	13	13	Unestimated in existing or planned progam						
CONVERTIBLE PRODUCTS Firewood 7/	27	27	unestimated	unesti- mated	7	7	6	7	6
TOTAL (TSPQ)	138 2	110 1			141	135	125	126	103

1/ Note that due to different bases for calculation, these figures may not be directly comparable. However, they may be used to show changes in specific comonents for calculations, over time. All calculations were done in cubic feet. The volumes in this table are estimates based on board foot/cubic foot ratio

2/ Yield of tumber projected for the period of 1980 to 1989, as calculated for the 1980 Timber Management Plan and adjusted for 1984 Oregon Wilderness Bill The Programmed Allowable Harvest (P A.H.) is the sawtimber from green and salvage sales scheduled for harvest.

3/ Allowable sale quantity calculated for the current land and resource management plan direction, projected into the future using new scientific information, such as yield tables and suitability for timber harvest, and using FORPLAN analysis model

4/ Estimated volume of ponderosa plne that is included in green sale volume

5/ Average volume sold was not adjusted for "buy-back" volume

6/ Reduction in all but E DEP is due to change in BF/CF ratio and estimated reduction in salvage volume as more stands become managed. Change in E DEP is mostly due to the planned departure from even flow

7/ Actual fitewood volume is based on years 1985 to 1988 Essentially all of this was sold as personal use Planned volume is the estimated amount if firewood available Typically less than half of this will be utilized

TABLE S-9
PRESENT NET VALUE AND DISCOUNTED COSTS AND BENEFITS OF ALTERNATIVES
(Ranked by Decreasing PNV - Million Dollars)

Alternative/ Benchmark	Present Net Value	Change	Discounted Costs	Change	Discounted Benefits	Change
Max PNV Benchmark 7	512		241		754	
Alternative I	475	-37	227	-14	701	-53
Alternative E-Dep	471	-4	221	-6	693	-8
Alternative B Mod	452	-19	262	+41	714	+21
Alternative A	421	-31	238	-25	657	-57
Alternative C-MOD	395	-26	213	-23	608	49
No Change	380	-15	245	+32	653	+45

Environmental Consequences Summary

Effects on Resources that Vary by Alternative

Oregon State Air Quality

Implementation Plan

The current Forest and Grassland prescribed fire program is producing 10 to 20 tons/year of total suspended particulates (TSP). This amount varies by alternative. Fugitive dust from construction activities and traffic also occurs.

Cultural Resources

Cultural and archaeological sites will be protected in all alternatives. However, the possibility of damage, vandalism, and discovery of sites will be greater in alternatives that emphasize commodity resources.

Developed Recreation

The Forest maintains 30 developed recreation sites; 96 miles of trail, 15.8 miles of which are designated "National Recreation Trail"; and seven small reservoirs. Alternatives consider the development of additional recreational facilities, including trails, campgrounds and impoundments. The associated recreational activities can result in environmental effects of a local nature, such as vegetation loss, soil compaction, erosion, and conflicts with wildlife, timber harvest activities, and livestock grazing.

Dispersed Recreation

Over 445,000 visitor days of use are received annually, and recreation use continues to increase. This amount of dispersed recreational use calls for controls on off-road vehicle use to prevent noise pollution, damage to soil, vegetation, and aesthetics; and road closures to maintain habitat security for wildlife, to prevent damage to road surfaces, and to prevent conflicts with other resource management activities such as log hauling. The alternatives affect the amount of unroaded area available for semiprimitive and other dispersed recreational activities.

Energy Conservation

Activities on the Forest and Grassland which generally have a positive net energy balance are firewood harvesting and forage production. Generally, all other activities consume more energy than they produce. The average range that energy consumption from planned National Forest activities exceeds energy yields has been estimated to be in the magnitude of three to five billion BTU's/decade.

Fire and Fuels

There are an average 108 wildfire ignitions per year. Prescribed fire is being increasingly used as a management tool. Approximately 15 to 20 thousand acres of slash are treated with prescribed fire annually. Use of fire in management can have effects on soil erosion, short-term appearances, air quality, vegetation productivity, plant community, species composition, and fuels.

Floodplains and Wetlands

Considerations for floodplain management as required by Executive Order 11988, and protection of wetlands, Executive Order 11990, are incorporated into all alternatives.

Human Resource Programs and Civil Rights

The Forest and Grassland will continue to participate in these programs in accordance with the laws, administrative opportunities, and economic availability of programs. Minorities and economically disadvantaged groups will not be adversely affected by any of the alternatives.

Landscape Appearance

Emphasis on maintaining scenic quality within road corridors varies by alternative. Significant effects on landscape appearance are related to timber harvest practices; dispersion of cutting units, protection and management of riparian areas; and road location, design, and densities, all of which are related to direction in the management prescriptions in Chapter 4 of the Plan.

Livestock Grazing

Livestock grazing is maintained at nearly current levels for most alternatives considered. Livestock grazing activities, if not carefully managed, can cause soil compaction, impact streamside vegetation, affect water quality of stream habitat for fisheries, compete with wildhfe, affect plant community composition and productivity over time, and alter the appearance of natural settings. Water developments and salt intended for livestock also benefit wildlife.

Minerals

There is little real difference in the effects on mineral production or mineral leasing between alternatives. The effects on mining operations and mineral leasing would be reflected in operation plans and lease stipulations, for example alternatives proposing unroaded area management and research natural areas could result in attachment of no occupancy stipulations to specific leases. Mineral leasing provides returns to local governments in terms of receipts.

Old Growth Habitat

Old growth habitat is identified for protection and management for purposes of wildlife habitat and genetic diversity. The amount and dispersion varies by alternative. Protection of old growth habitat results in reduced timber harvest levels.

Prime Farmlands, Forestlands, and Rangelands

All the alternatives propose actions which are consistent with the intent of the Secretary of Agriculture direction for protecting and managing prime lands.

Research Natural Areas

Research Natural Areas (RNA's) preserve places for the purpose of research and maintaining genetic diversity. The maximum increase in area proposed for RNA's is 2,630 acres. The designation and protection of RNA's can affect timber harvest level, mineral leasing, road system development and grazing activities. Because of the small acreage involved, these consequences are minimal regardless of alternative.

Riparian

Approximately 800 miles of streamside area, plus wet meadows and lake shores, have been identified on the Forest as riparian areas. While only an estimated two percent of the total Forest and Grassland area is considered riparian, it receives the most intensive and concentrated use of any land area. More than 50 percent of the recreational use occurs there, transportation corridors are located along stream bottoms, grazing in the past has been intense; important wildlife habitats are found there; streamside areas provide productive timber sites; fisheries habitat is dependent, in part, on the condition of streamside vegetation, Nearly all Forest activities have either direct or indirect effects on riparian areas and water quality. Protection and restoration of riparian areas can impact other activities over the short term.

Roads and Off-Road Vehicles

Over 4,550 miles of roads have been constructed on the Forest and Grassland. Management and maintenance of this transportation system requires closures and restrictions at times to protect road surfaces, other resources, and public safety. Travel planning for road and off-road vehicle use has placed more restrictions on vehicles and motorized use of the Forest and Grassland in order to protect resources.

Social and Economic

The Forest and Grassland directly influences a six County area which contains a population of about 110,000. Socio-economic consequences are related to economic stability of communities, livelihoods in terms of numbers and types of jobs, local government revenues, lifestyles, and community cohesion. Alternatives favoring timber and other commodity uses tend to impact livelihoods and lifestyles dependent on amenity values, and vice versa. On this Forest, the production of net cash returns to the U.S. Treasury, levels of employment, and payments to counties are directly dependent upon the level of timber production. These benefits are less under alternatives that place more emphasis on nontimber issues, such as those associated with wilderness and roadless areas, high levels of scenic quality, and vegetative diversity. The benefits associated with minerals are similar for all alternatives.

Threatened and Endangered Species

The only Federally listed threatened or endangered species observed on the Forest/Grassland are the peregrine falcon and bald eagle. Neither is a known permanent resident. All Federal and State listed species are protected in all alternatives as provided for in the standards and guidelines in Chapter 4 of the Forest and Grassland Plans, or Appendix D of this FEIS.

Formal consultation with the Fish and Wildlife Service (FWS) was initiated through request by the Forest Service in October 1986. The resultant FWS consultation addressed the possible effects of selecting Alternative E- Departure in the DEIS. The consultation was limited to the bald eagle and the peregrine falcon, both federally classified as endangered. The biological opinion of the FWS is that the implementation of Alternative E-Departure in the DEIS would not jeopardize the continued existence of the bald eagle and peregrine falcon.

There has been continued informal consultation between the Ochoco National Forest and FWS since the DEIS. The Feis incorporates a number of changes that have resulted from both the formal and informal consultation. Among them are the allocation of 570 acres to an Eagle Roosting Management Area (MA-F12) for all the alternatives, specific monitoring requirements for threatened and endangered species, and the direction to develop site specific management plans for the roosting sites during implementation of the Forest and Grassland Plans.

Timber Management

Timber production and associated management, and

cultural activities have the greatest influence locally on jobs and economics of any resource on the Forest. An array of alternatives ranging from 15.6 milhon cubic feet production per year to 21.9 million cubic feet is examined in the environmental impact statement. The alternatives considered emphasize utilization of appropriate silvicultural systems which may be either even- or uneven-age depending on field conditions and objectives. Timber management and associated activities such as road construction, reforestation, thinning, harvest, slash disposal, and various site treatments have a wide variety of effects on other resources, particularly soil, water, air, wildlife, fisheries, landscape, recreational experiences, and socio-economics. Practices and management requirements are applied that minimize adverse effects.

Toxic and Hazardous Materials

Activities that may occur on the Forest and Grassland involving the use or disposal of hazardous or toxic materials are required to meet all State and Federal laws and provisions. Therefore, provisions and procedures for dealing with any of these materials are the same for all alternatives.

Unroaded Areas

The areas remaining that have not been designated as wilderness or wild and scenic rivers, totaling 52,880 acres, are treated in the Plans.

The range of alternatives provides for varying degrees of development, or retention of roadless characteristics for semiprimitive recreation.

The most significant conflict of maintaining unroaded areas is with timber production. Approximately 38,430 acres will be managed in an unroaded condition for semiprimitive recreation under the preferred alternative.

Utility and Transportation Corridors

All alternatives recognize State and County road corridors. Utility corridors are also recognized and no alternatives result in any conflict with movement of power or energy throughout the area.

Wild and Scenic Rivers

An inventory conducted by the National Park Service under PL 88-29 and PL 90-252 identified segments of the Deschutes River, Crooked River, and North Fork Crooked River for study and potential classification under the Wild and Scenic Rivers Act. The Oregon Rivers Act of 1988 classified segments of these rivers. All alternatives provide for the protection of the rivers until required planning for their management is complete.

Eligibility and suitability determinations have been made for a portion of the Squaw Creek area. A 7.5 mile segment of the creek, 1,370 acres, from the Grassland boundary to the confluence with the Deshutes River would be managed as a "scenic river." In addition, it would be recommended for inclusion in the Wild and Scenic River System. This preliminary recommendation would receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. The Congress has reserved the authority to make final decisions on designations of rivers as part of the National Wild and Scenic Rivers System.

Wilderness Establishment

Three wilderness areas totaling 36,200 acres were established under the Oregon Wilderness Act of 1984 on the Ochoco National Forest. A range of options were considered for the Deschutes River-Steelhead Falls area which the Oregon Wilderness Act identified for further study. No wilderness is being recommended. A 7840-acre semiprimitive nonmotorized management area is being established which involves part of the WSA; some of the remaining portion is included in the classified Deschutes Scenic River. North Fork Crooked River area is addressed in a separate study by the BLM. The BLM recommended no wilderness in their draft EIS for this area.

Wildlife

Important game species habitat, namely deer and elk, is afforded some degree of protection in all alternatives, but its management is emphasized in certain ones. Snag and old growth forest habitat is provided at varying levels throughout a range of alternatives. Fish habitat protection is related to those alternatives emphasizing management of riparian areas. Management activities and uses on the Forest and Grassland directly and indirectly affect wildlife and fisheries habitat. Road construction, timber harvest, timber cultural practices, livestock grazing, recreation uses, prescribed fire, and firewood cutting are common activities on the Forest and Grassland which can affect wildlife and fisheries habitat. Alternatives, management requirements, standards and guidelines, and project design incorporate means to minimize impacts on wildlife and their habitat.

Probable Adverse Environmental Effects that cannot be Avoided

Soil displacement or erosion can be expected to result from planned management activities, such as vegetation removal; slash disposal; logskidding; prescribed fire, construction and maintenance of roads, trails, transmission facilities, recreation sites and others. Soil productivity would be maintained except for sites dedicated to roads, skid trails, log landings, recreation sites, and other facilities or uses that may compact the soil, alter soil profile, or deplete nutrients. An estimated one percent of the Forest and Grassland would be occupied by roads or facilities. Experience has shown that temporary road surfaces can be re-vegetated, but the productivity is reduced. Forest-wide an estimated 10 percent of cable-logged areas and 30 percent of tractor-logged areas would experience increases in soil bulk densities or compaction. These factors, in turn, have indirect effects relating to reduced wildlife habitat, vegetation productivity, occurrence and spread of noxious weeds, and increases in stream sedimentation.

Prescribed fire use may be expected to contribute to total suspended particulates (TSP) in the atmosphere, to periodic increases in haze, and may reduce visibility. The general natural appearance of the landscape and forest would change overtime, with the natural and characteristic features as they exist today giving way to more domination in places by management activities and results of management.

Forest vegetation would be altered in respect to species composition, stand structure, and age. Existing mature forest "suitable" lands would be subject to management treatments. Where feasible, mixed conifer stands would be replaced with currently more economically or silviculturally desirable species (primarily ponderosa pine). Other management treatments include overstory removal of old-growth ponderosa pine from multi-storied stands, resulting in a reduction in basal area, and removal of less desirable species within densely forested areas by thinnings. Intensively managed or regulated forests may provide less habitat for species dependent on old growth forest, snags and down material, and provide less scenic settings, species diversity, and habitat diversity.

Average size of trees that are harvested would change over time to smaller material as old growth and existing mature forest are converted to younger stands. Over time this would have an affect on types of harvest equipment and wood processing, and machinery and manufacturing requirements; and likely will bring a shift towards cubic feet management rather than board feet.

Approximately 93,110 acres on the Forest and Grassland would remain roadless. With the exception of 36,200 acres designated as wilderness, 4030 acres designated as wild and scenic rivers, and 52,880 acres remaining available, opportunities for semiprimitive recreation may decrease over time.

Increased road densities, improvement in access, subsequent increases in human presence, and continuing expansion of management activities can result in reduction of wildlife habitat security, harassment of wildlife, increased road kills, physiological stress in wildlife species resulting in altered behavior and productivity, and changes in hunter attitudes and experiences over time. The preferred alternative provides for road management closures and restrictions which would reduce open road density over the next five decades. Actions to improve riparian conditions may result in increased costs to grazing management; e.g., in installation of improvements (fencing and water developments), herding, and transport to control stock distribution and use, and possible temporary reductions in animal unit months.

Current procedures cannot insure that all cultural resource sites will be located. Some sites could be inadvertently destroyed or damaged. Such impacts are unavoidable pending advances in inventory techniques.

Forest users would encounter more controls and restrictions over time as management intensity, resource competition, and human populations increase.

Short-Term Uses of the Environment and Maintenance of Long-Term Productivity

From a perspective that each generation is trustee of the environment for succeeding generations, an objective of this Plan is to provide for the proper and continued development of resources in a manner that maintains economic viability, yet maintains local natural heritages, such as, wildlife habitat, outdoor recreation opportunities, water quality, scenic qualities, and livestock grazing. The preferred alternative emphasizes a balanced mix of uses and intensive commodity (timber, range) production on suitable places in order to help provide economic stability, but also attempts to provide for the protection of other resources (soil, water, wildlife habitat, aesthetics).

While the Plan involves harvest of mature timber, sustaining or improving long-term productivity is planned through intensive forest management practices (e.g. reforestation and thinnings). This may result in future utilization of smaller trees to maintain harvest levels over time. Lands were identified as "unsuitable" for sustained yield timber management due to regeneration difficulties. Dispersion of timber harvest activity, retention of old growth, and protection of riparian areas and big game habitat have all been planned to prevent impairment of long-term land and resource productivity. Construction of roads, mechanical slash piling, and log skidding are short-term uses that can reduce long-term vegetation productivity.

Increases in road densities, improvement in access, subsequent increases in human presence, and continuing management activities have the potential in the near future to affect long-term productivity of wildlife habitats, aquatic systems, and local socioeconomic aspects.

Irreversible or Irretrievable Commitment of Resources

This plan deals with both developed and undeveloped or roadless lands. Lands where road systems, plantations, thinnings, and structures are established represent a type of economic commitment that for all practical purposes commits the land to those activities. These investments represent "sunk funds" from an economic standpoint and are not retrievable, nor do they necessarily have any "liquidity," over the planning period.

The specific acres (estimated to be one percent of the total Forest and Grassland area) upon which roads and facilities are constructed, represent a loss of soil and vegetation productivity and unaltered landscape.

Use of rock for road surfacing and construction purposes, estimated to be 200,000 tons annually on the Forest and Grassland, is an irreversible and irretrievable commitment of a resource, but is not considered critical because of the abundance of quality rock in this locale.

Undeveloped and roadless areas once allocated for development will, within a relatively short amount of time, become irretrievably unsuited for wilderness classification. In the case of lands already intensively developed by roading, a high degree of irreversibility exists; whereas, in the case of undeveloped lands, frequently a wide range of management options exist.

Dasmann, et al, in *Ecological Principles for Economic Development*, 1973 (pp. 22-23), recognized

six broad development levels for lands, each representing progressively greater commitment of resources. The development levels are:

- 1) The land can be left in a completely natural state and reserved for scientific study, educational use, wilderness, watershed protection, and its contribution to landscape stability.
- 2) It can be used as a park, refuge, or reserve with the natural scene remaining largely undisturbed to serve as a setting for outdoor recreation and an attraction to tourism.
- 3) It can be used for limited harvest of its wild vegetation or animal life, but maintained for the most part in a wild state - serving to maintain landscape stability, support certain kinds of scientific or educational uses, provide for some recreation and tourism, and yield certain commodities from its wild populations.
- 4) It can be used for more intensive utilization of its wild products as in forest production, pasture for domestic stock (recreation), or intensive wildlife production. In this case, its value as a "wild" area for scientific study diminishes, but it gains usefulness for other kinds of scientific and educational uses. Its value for (some) tourism and outdoor recreation diminishes, but is not necessarily lost. Its role in landscape and watershed stability is changed, but may be maintained at a relatively high level.
- 5) The wild vegetation and animal life having been removed in part, it can be intensively utilized for the cultivation of planted tree crops, pastures, or farming crops.
- 6) The wild vegetation and animal life having been almost completely removed, it can be used for intensive urban, industrial, or transportation purposes.

So long as any of the first three choices are taken, the option remains open to change to any of the others. In the fourth choice, the options for restoring the land to any of the first three levels are reduced, but not eliminated. Lands allocated to development are likely to approach the fifth and sixth level over time.
This would largely prohibit any shift to other alternatives on those acres.

For Preferred Alternative I, with the resource allocations proposed herein, 19 percent of the lands are committed to categories of "low" or "moderate" irreversibility; about 80 percent of the land that is proposed for intensive timber culture, transportation systems, special uses, and rangeland management can be categorized as "moderately high." Another , one percent would be considered "high" irreversibility of irretrievability for commitment of resources (Table S-10).

Mitigation

Mitigation measures are intended to minimize or eliminate potential conflicts or adverse effects of implementation. Mitigation measures have been developed through interdisciplinary efforts and incorporated into the alternatives at different levels in several different ways.

The standards and guidelines and management area prescriptions in Chapter 4 of the Plans are a fundamental and integral part of these measures, and as such they are a basic and essential part of the Plans.

The allocations play an important role in mitigation by the separation of incompatible uses, impacts and conflicts.

National Forest Management Act (NFMA) requirements were incorporated into the planning process and are reflected in the allocations and standards and guidelines (Chapter 4 of the Forest and Grassland Plans), and are discussed in Appendix B.

"General Water Quality Best Management Practices" (USDA Forest Service, Pacific Northwest Region, November 1988. 86p) are incorporated by reference under requirements of Section 319 of the Clean Water Act, are reflected in the standards and guidelines (Chapter 4 of the Forest and Grassland Plans), and are discussed in Appendix H.

Mitigation measures are developed at the site spe-

cific project level of planning, and projects are "tiered" to other planning level measures above.

Coordination with other Agencies

This planning effort involved coordination with major local, county, state, and federal agencies.

The Preferred Alternative is not in substantial conflict with the plans of any other agency.

TABLE S-10

Acreage by Levels of Irreversibility in Alternative I (The Preferred Final for the Forest and Grassland)

	Irreversibility					
Management Areas	Low 1	2	3	4	5	High 6
MA-F1 MA-F2 MA-F3 MA-F4 MA-F5 MA-F6 MA-F7 MA-F8 MA-F9 MA-F10 MA-F11 MA-F12 MA-F13 MA-F14 MA-F15 MA-F16 MA-F17 MA-F18 MA-F16 MA-F17 MA-F18 MA-F19 MA-F20 MA-F21 MA-F23 MA-F24 MA-F25 MA-F26 MA-F27 MA-F28 MA-G1 MA-G2 MA-G3 MA-G4 MA-G3 MA-G11 MA-G12 MA-G13 MA-G14	13,400 5,400 17,400 1,125 4,400 19,250	170 11,820 3,110 7,750 830 830 740 720 650 7,840 430 560	9,390 2,480 7,910 570 1,970 18,130 1,580 1,070 2,560 770 1,830 6,850 33,260 1,000 2,110	1,810 64,130 107,360 496,850 22,700 12,740 59,440 150 2,690		460 80 460
TOTAL ACRES	61,085	34,620	91,570	767,870	0	1,000
Net Acres - Forest and Grassland 1/	60,860	34,480	90,430	766,750	0	12,000
Percent Total Acres Forest and Grassland	6	4	9	80	0	1

1/ Total acres less roads

Chapter 1

i

Purpose and Need

Chapter 1

Purpose and Need

Introduction

The Forest and Grassland Plans are major Federal actions with significant effects on the quality of the human environment; therefore, an Environmental Impact Statement is required. The Notice of Intent to prepare an EIS was published in the Federal Register in 1980; the Notice of Availability of the Draft EIS (DEIS) was published in the Federal Register on Sept. 12, 1986. A Supplement to the DEIS was prepared to address timber industry concerns outlined in two appeals, and a Notice of Availability was published in the Federal Register in October, 1989.

This Final Environmental Impact Statement (FEIS) discusses six alternatives, including the actions described in the Forest and Grassland Plans. A reasonable range of alternatives has been explored with an initial look at eleven alternatives in the DEIS. The Supplement to the DEIS, discussed in Chapter 2 of this FEIS, added the No Change (NC) alternative to reflect the continued application of the existing Ochoco National Forest Timber Resource Plan. The public comment to the DEIS has resulted in the formulation of Alternative I, and the modification of Alternatives B and C for the Final. This FEIS also describes the affected environment and the environmental consequences of implementing the alternatives.

The alternatives represent different ways to: 1) address local, regional, and national issues, concerns, and opportunities; 2) provide the mix of uses representing "multiple use"; and 3) provide a flow of goods and services from the Ochoco National Forest and the Crooked River National Grassland, Each alternative generates a different mix of goods and services. Alternatives were evaluated to determine their potential to provide a sustained yield of goods and services in ways that maximize long-term public benefits in an environmentally acceptable manner. The proposed action, Alternative I, provides multiple-uses, goods, and services which maximize longterm net public benefits within the laws and regulations governing National Forests. The definition of "net public benefits," as noted in 36 CFR 219.3, can be summarized as the overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs).

The purpose of the FEIS is to document and disclose environmental outcomes to make a reasoned choice among alternatives. Equally important, the FEIS provides the environmental documentation for public review. The DEIS encouraged public participation and comment, and the FEIS reflects that participation and comment. The initial public involvement process and the resultant issues and concerns are discussed in Appendix A to this FEIS. The Forest responses to the public comments on the DEIS are displayed in Appendix I. The major changes between the draft preferred alternative in the DEIS and Preferred Alternative I in the FEIS are discussed in detail in this chapter.

The purpose of the Forest and Grassland Plans is to direct and guide all natural resource management activities on the National Forest and Grassland. The plans meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) as amended by the National Forest Management Act of 1976 (NFMA), plus the associated National Forest System Land and Resource Planning Regulations (36 CFR 219). The plan period covers the next 10 to 15 years. This period is defined by the NFMA regulations as one decade (36 CFR 219.3 (1982)), while the law permits a 15-year maximum (16 USC 1604 (f)(5)). In the Plan, conditions on the Forest will be evaluated every five years. Under certain circumstances, the plan may be revised (36 CFR 219.10 (g)(1982), 16 USC 1604 (f)(5)). Chapters 5 of the Forest and Grassland Plans discuss implementation and the Plan amendment or revision process.

A Record of Decision (ROD) accompanies this FEIS and outlines the processes and decisions, and the rationale for the decision. The decision is represented by the two Plans outlined in the proposed action in this FEIS, which is Preferred Alternative I. Information in the FEIS provided the basis from which the Regional Forester made the decision to implement the Plans.

Implementation of the Forest and Grassland Plans will involve project level environmental analysis as discussed in Chapters 5 of the Plans. These analyses will deal with issues and management concerns relating to the specific projects and project areas, and will be in accord with the direction in the two Plans. Project analysis will be tiered to this FEIS.

This FEIS includes a list of acronyms and a glossary of terms to assist the reader. The FEIS and the two Plans each have a table of contents, a list of tables and figures, and an index to assist the reader in locating the various subject areas and discussions.

The approved Plans will not become effective until at least 30 days after the Notice of Availability of the FEIS is published in the Federal Register. See Planning Records, pg. 1-3. Additional information on Regional planning procedures is available from the Director of Planning at the USDA Forest Service, Pacific Northwest Region, 319 S.W. Pine St., P.O. Box 3623, Portland, Oregon 97208.

Planning Process

The Forest Service has a four-level, integrated planning process as required by RPA, NFMA, and the related implementing regulations.

1. National	Resource Planning Act Assessment and Program.		
2. Regional	Regional Guide for the Pacific Northwest Region (May 1984).		
3. Forest	National Forest Land and Resource Management Plans (Forest Plans) for National Forest System lands. Tiered to Regional Guide.		
4. Project	Site or project specific plans, generally at Ranger District level Tiered to Forest Plan		

At the national level, the RPA program^v establishes long range resource objectives based on the present and anticipated supply of, and demand for, various resources. Each of the nine Forest Service Regions is apportioned a share of the National objectives based on that Region's resource capabilities and needs. The RPA assessment is an aggregation of the Region's forest plans.

The Forest Service Pacific Northwest Region resource situation is addressed in the "Regional Guide."² This document apportions National objectives to each National Forest in the Pacific Northwest. In addition, the Regional Guide establishes certain management standards and guidelines.

The environmental analysis process, documented in this FEIS, has considered a reasonable range of alternatives. One of the alternatives consists of the current RPA Program resource objectives identified in the Regional Guide. Analysis of the alternative's outputs and effects in Forest planning provides valuable information for future Regional and National Assessments and programs. The planning process is iterative; the information from the Forest level flows up to the National level, is utilized in developing the RPA Program, and then is related back to Regional and Forest levels.

Planning at the RPA program level is used to assist Congress in the development, appropriation, and authorization of the agency's annual budget. Since the amount and allocations in the annual budget have a major effect on Forest management activities, many of the Forest's actual outputs and environmental effects are determined to a great degree by the annual budget. The annual budget planning is done at all agency levels in order to support programs on the National Forests.

Forest plans are prepared at the local level (at the applicable Forest headquarters). These plans provide allocations and standards and guidelines, and are generally programmatic in nature.

The planning process specified in the NFMA implementing regulations (36 CFR 219), and the environmental analysis process specified in the CEQ regulations (40 CFR 1500), were used in developing this FEIS and the Forest and Grassland Plans. The general planning steps employed are shown below.

Forest Planning Process Steps

- 1. Identification of Issues & Concerns
- 2. Development of Planning Criteria
- 3. Inventory Data & Information Collection
- 4. Analysis of the Management Situation
- 5. Formulation of Alternatives
- 6. Estimated Effects of Alternatives
- 7. Evaluation of Alternatives
- 8. Preferred Alternative Recommendation
- 9. Environmental Statement
- 10. Public Review
- 11. Plan Implementation
- 12. Monitoring & Evaluation

The chronology for the formulation of the Forest and Grassland plans is as follows:

Year	Process
1980	Notice of Intent Published in the Federal Register
1981	Preliminary Identification of Issues and Concerns
1982	Forest Inventory Completed
1984	Analysis of Management Situation
1985	Formulation and Analysis of Alternatives
	Evaluation of Alternatives
	Draft Preferred Alternative Selection
1986	Draft Environmental Statement Published
	Public Comment Period
1988	Supplement to DEIS Published
1989	Public Comment Period for SEIS Evaluation of Public Comment Formulation
	Analysis and Modification of Final Alternative
	Final Plan Published
1990	Plan Implementation, Monitor ing, and Evaluation

On implementation, this FEIS will be a base to "tier" environmental analyses for proposed Forest management activities and projects. Tiering means that environmental analyses conducted for specific Forest projects will reference and be consistent with the direction in the FEIS and Forest or Grassland Plan, and associated documents rather than repeating them (40 CFR 1508.28). Environmental documents for specific projects will then concentrate only on issues unique to those projects. "Monitoring" will be a way to assure that activities are consistent with plan projections, and to determine if, and where changes to the plan may be necessary. The Forest and Grassland Plans are intended to supersede and/or incorporate all previous land management and resource plans for the Ochoco National Forest and Crooked River National Grassland. On implementation, all activities affecting the Forest and Grassland, including budget proposals, will comply with the Forest and Grassland Plans. In addition, all permits, contracts, and other instruments for the management, use, or occupancy of the National Forest and Grassland will be required to be in conformance with the Plans. Chapters 5 of the two Plans address existing and required plans and their status in relation to the Forest and Grassland Plans.

Planning Records

All of the documents and files that chronicle the Ochoco National Forest and the Crooked River National Grassland's planning process are available for review at the Forest Supervisor's Office, 155 N. Court, P.O. Box 490, Prineville, Oregon 97754. These documents and files (planning records) contain the detailed information used in developing the FEIS and the two Plans. The FEIS, the appendices to the FEIS, and the two Plans reference the planning records.

Regional direction for some procedures, such as management requirements, are available at the USDA Forest Service, Pacific Northwest Region, 319 Southwest Pine St., P.O. Box 3623, Portland, Oregon 97208.

Forest Overview

Located near the geographic center of Oregon, the Ochoco National Forest is unique among its neighboring national forests; it administers the only national grassland in the Pacific Northwest Region. The combined area of the Forest and Crooked River national grassland equals 956,150 acres (net acres: 844,640 Forest acres; 111,510 Grassland acres). The Forest is subdivided into four ranger districts: Big Summit, Paulina, Prineville, and Snow Mountain. The Grassland is administered as a separate unit. The headquarters for both the Forest and Grassland are in Prineville (Figures 1-1 and 1-2).

The National Forest lies in a four county area which includes: Crook (population 13,400), Grant (8,230), Harney (7,350), and Wheeler (1,430). The National Grassland is contained in the boundaries of Jefferson County (12,150).

The National Forest and Grassland directly influence local community lifestyles, recreational activities, and economic well being in these counties. Local economies, like Burns, Hines, Madras, and Prineville, rely on forest products manufacturing and ranching.

The Forest occupies a southwestern extension of the Blue Mountain physiographic province (Franklin and Dyrness, 1973) known as the Ochoco and Maury Mountains. Elevations range from 2,200 feet to over 7,000 feet. The Crooked River National Grassland is a northern physiographic extension of high lava plains containing rolling range country interspersed with deep canyons, mesas, and volcanic buttes. The Deschutes River drains the Grassland. The Crooked River, which is a tributary to the Deschutes, is the largest river that originates from the northern portion of the Forest (Big Summit, Paulina, and Prineville Districts).

Water flowing from the Snow Mountain District enters three systems: the Crooked River, the John Day River, and the Malheur and Harney Lakes area. The area surrounding the Ochoco is referred to as the "High Desert" due to its relatively arid climate and cool average annual temperature. The Forest can be characterized as an island of green rising from within the high mountain desert.

The Ochoco, which in the language of the Paiute Indian means "Wind in the Willows," is characterized by park-like stands of old-growth ponderosa pine intermingled with mountain meadows that are often fringed with aspen. A pastoral aspect is portrayed by cattle grazing the meadows and grassy forest understories. This impression is readily gained as one travels on U.S. Route 26, from Prineville northeast across the Forest to Ochoco Summit.





The Grassland, and approximately a third of the Forest, have vegetation characteristic of the surrounding high desert. Juniper, sagebrush, and grasses predominate as a result of low annual precipitation (less than 10 inches). As elevation increases, stands of ponderosa pines are encountered. The open, park-like pine stands are extensive and compose the largest single forest type found on the Ochoco National Forest. Mixed conifer stands occur on the northern and eastern aspects. These stands are made up of varying proportions of Douglas-fir, ponderosa pine, white fir, and western larch. The Forest also has scattered stands of lodgepole pine at higher elevations. These cover approximately one percent of the total land area, and have been subject to major mortality caused by mountain pine beetle.

The diversity of the vegetation, climate, and geology provides habitat for a wide variety of wildlife and fish species. There are over 375 different species of reptiles, amphibians, birds, and mammals known or expected to occur on the Forest and Grassland. The fisheries resource includes 15 species of game fish and numerous nongame fish species in the Forest and Grassland's reservoirs, lakes, and streams. There are 45 miles of spawning streams used by anadromous fish.

Major recreational opportunities consist of rockhounding, water related recreation, and big game hunting. Agates and thundereggs are a national attraction for rockhounds. Antelope Reservoir, Delintment Lake, Walton Lake, and numerous creeks and rivers provide camping, picnicking, and fishing opportunities. Passage of the Oregon Wilderness Act in 1984 further enhanced the Forest's recreational opportunities by designating three Wildernesses: Black Canyon (13,400 acres), Mill Creek (17,400 acres), and Bridge Creek (5,400 acres). Big game and the Ochoco are synonymous to many hunters throughout the state. Hunting opportunities, provided by mule deer (22,600), Rocky Mountain elk (1750), and pronghorn antelope (750), are major attractions. Total recreational visitation averages 572,000 visitor days annually (see Table 2-8, FEIS Chapter 2); much of this is compressed into the 30-day period coinciding with the hunting seasons. There is one research natural area, with an additional five proposed.

The Forest has an estimated 6.3 billion board feet (MMBF) of standing timber and 533,177 acres classified as suitable for sustained yield timber production. About 137 MMBF of timber has been offered for sale by the Forest annually, with an average cut of 114 MMBF over the past decade. One hundred and five permittees use 75,000 AUM's annually on 90 grazing allotments. Mineral resources include mercury and gold, semi-precious gemstones such as agates and jasper, leasable potential oil and gas deposits, and potential geothermal resources.

Riparian areas include approximately 20,240 acres along 815 miles of streams. Average annual runoff from Forest watersheds is estimated at 574,000 acre feet. Maintaining or improving water quality, soil productivity, and riparian areas are important goals of Forest management activities.

Issues, Concerns and Opportunities

The Ochoco National Forest and Crooked River National Grassland contain varied and complex natural ecosystems which are managed and used by people within the local social and economic setting. The Forest and Grassland meet both local and national demands for resources, goods, and services, and provide opportunities for a diversity of land uses.

Individuals and interest groups have differing and often divergent ideas on how the Forest and Grassland should be managed. Because the resources, land uses, and environmental conditions of the Forest and Grassland are interconnected and finite, managing to emphasize particular resources can cause changes in others. Certain "tradeoffs" may result, and competition for some resources will undoubtedly occur In short, there are practical and natural limits to what the National Forest and Grassland can provide. An important planning task was determining what goods, services, uses, and environmental conditions people want (or do not want), and the different ways to manage the Forest and Grassland to meet those demands.

"Public issues" were determined and are defined as subjects or questions of widespread public interest relating to management of the National Forest and Grassland. Interests expressed by individuals and groups, and the physical, biological, and legal limits of Forest and Grassland management are incorporated into the public issues and management concerns identified, and used to guide the planning effort.

"Management concerns" are defined as issues, problems, or conditions which limit options or constrain management practices as generally perceived by the agency. These concerns are usually prompted by legal and regulatory requirements or actions necessary to protect or provide other resources at certain levels.

Lastly, "opportunities" were discovered or suggested by both the public and the Forest Service. Opportunities are often the basis for the issues or concerns identified. For example, the opportunity to preserve or develop resources to varying degrees on the National Forest and Grassland has been, and continues to be, the focus of many of the issues.

Identification of Ochoco National Forest and Crooked River National Grassland Issues, Concerns and Opportunities

The first step in the planning process was to identify the public issues, management concerns, and opportunities (ICO's). These ICO's were used to focus the planning effort; they ensured that the resulting Plans provided appropriate and effective management direction that addressed the ICO's.

In autumn of 1980, the Forest began to identify the principal issues to be addressed in the Forest Plan.

The approach utilized "interest groups" as a starting point. Individuals representing key interests of conservationists, ranchers, recreationists, sportsmen, the timber industry, and government agencies worked with the Forest's Interdisciplinary Planning Team to establish a base group of issues. This interaction provided the Forest with a consolidated list of 60 issues which were submitted to the public for review.

Critique and comment was received at public meetings and through the mail. Using this information, the planning team again consolidated the issues into seventeen issue statements. These issues were again made available to the public to determine the degree of interest in each. Subsequently, the interdisciplinary team condensed the seventeen issues to twelve by combining related and compatible items (see below).

The DEIS was released for public comment in 1986. Over 2,150 responses were received. From these responses, 25,985 specific comments were identified through coding and analysis. These comments were grouped by similarity and subject, and were evaluated. This provided further clarification and refinement of the twelve ICO's to be addressed in the planning process.

In 1988, a Supplement to the DEIS was prepared and released to the public. It addressed some Forest Industry concerns about management requirements and disclosed opportunity costs associated with their application. It also portrayed a "no change" alternative based on the 1979 Timber Resource Plan and unit plans. The nearly 200 public responses to the Supplement were coded and analyzed similarly to the DEIS comments, grouped by resource or issue, and used to further refine the final ICO's.

Additional information on the formulation, evaluation, and selection of the ICO's is presented in Appendix A. The entire response, materials from the mailings, and the evaluation of public comments are available for review at the Forest Supervisor's Office in Prineville.

The final ICO's identified for the Ochoco National Forest and Crooked River Grassland are summarized as follows:

#1 What Should Be the Level of Timber Production?

Sustained Yield/Even-Flow and Departure There was unanimous support for sustained yield and even-flow - a reaction to the proposed departure alternative, Alternative E-Departure, for the Ochoco National Forest. There was essentially no support for a departure from an even-flow to maintain high timber supplies for the first decade. Timber industry and dependent publics continued to offer support for sustained yield and an even-flow. Local economic stability and jobs were strongly related to high harvest levels by timber industry and dependent publics. At the other end of the spectrum, conservationists favored a much more conservative harvest level of 75 to 90 MMBF annually. The departure option was seen by industry as an unstable timber supply over time, and a negative influence on business development and stability over time. Conservationists suggested that the departure option was merely a euphemism for the rapid liquidation of old growth forest.

Uneven-aged Management

Timber industry and other groups noted some advantages, and expressed general interest in the Forest exploring uneven-aged management strategies on all or portions of the ponderosa pine stands available for timber management. Generally this silvicultural system is perceived as having the benefit of allowing harvest while providing for other resource needs. It is perceived by industry as means to allow the continuation of high harvest levels in pine while providing a quality log. Conservation groups, and other publics sensitive to even-aged management systems, see this as a means to limit clearcutting, reduce harvest levels, better manage for snag dependent wildlife species, and preserve a forested appearance over time.

Timber Supply/ASQ

Growth and inventory of forest stands is measured in units of cubic foot volume because it is independent of numerous product requirements occurring within a locale, region, or the nation as a whole. Board foot volume measurement varies with size of trees and is designed for certain product specifications and current technology. Young stands that have been regenerated cannot be measured in board foot or equivalent units of measurement; attempting to do so would underestimate the biological potential of timber producing lands and make future growth projections impossible. It is Forest Service Policy (FSM 1922.15) to use cubic foot volume as a measurement of long-term sustained yield, as well to regulate the amount of timber to be offered and sold as specified by the allowable timber sale quantity (ASQ), in order to respond to changing technology and product requirements projected for the future (RPA, 1985).

Between 1990 and 2000, the average annual harvest under the Forest Plan will be 19.0 million cubic feet (MMCF) (95 MMBF), slightly below the current harvest level. The volume of ponderosa pine offered annually for the first decade will average 17.0 MMCF (85 MMBF). This represents a considerable decrease from pine volume sold between 1979 and 1988, which averaged 109 MMBF annually.

The maximum level of timber volume that can be annually produced on a sustainable basis from the Forest is 23.5 MMCF (maximum timber benchmark). Competitive resources will have to be managed at or near minimum levels to sustain this level of timber harvest. This maximum level is 10 percent higher than the current Forest output. Changing the timber harvest level one way or another will probably affect other forms of resource management. The ability to resolve this issue is constrained by the trade-offs that are considered acceptable.

Within Crook and Harney Counties, over 80 percent of the forested land is in public ownership, most of which is administered by the Forest Service. Maximum mill capacity in these two counties, approximately 385 MMBF annually, substantially exceeds timber volumes processed in the past. Many factors have influenced the volume processed (including stumpage prices and expected market conditions), causing actual production to vary considerably from year to year. Recent estimates (1987) indicate that approximately 280 MMBF (75 percent of maximum capacity) are currently milled annually in Crook and Harney counties. Lack of suitable timber supply from the Ochoco National Forest has been portrayed as the cause of higher stumpage prices, thus reducing the ability of local forest products firms to compete in the market place. Higher timber volumes sold from the Ochoco could be processed locally, possibly leading to lower stumpage prices.

Ponderosa Pine Supply and Tree Size

The species composition of the harvest has also become an element of this issue. Over the years, the majority of the Forest's timber harvest was composed of large ponderosa pine trees. As a result, local sawmills were set up to process large pine logs. While a substantial volume of ponderosa pine remains on the Forest, future harvests will include greater percentages of other species, such as Douglasfir, western larch, and white fir. The average size of these trees is substantially smaller than the ponderosa pine trees harvested in the past. The change in tree size and species will require local mills to retool for efficient log handling. Other species do not presently have the secondary markets for remilling that pine has. The rate that these less profitable species become part of the Forest's harvest has become a source of concern to local sawmills.

#2 How can Activities on the Forest and Grassland Fulfill Social and Economic Wants and Needs of Local Communities?

The surrounding communities are significantly affected both socially and economically by the resource management carried out on the Forest and Grassland. County revenues from the Forest provide 30 percent of some local counties' total annual receipts. The timber industry and related government agencies account for approximately half of the local area's economic base. The harvest level provided by the Forest contributes a major economic return to the local economy. For example, greater harvest levels attained from the Forest will likely result in more local jobs and income. Additionally, twenty five percent of the Forest's receipts are returned to the counties. Timber is the primary commodity output from the Ochoco National Forest and accounts for more than 90 percent of its receipts. Management of timber also significantly affects economic efficiency.

The large old growth ponderosa pine were particularly noted for their significant value to timber industry, with stumpage valued as much as 30 times greater than second growth timber. A significant amount of support exists for the sustaining the production of large diameter pine (at least 18 inches DBH) over time to maintain the present industry base in Prineville and surrounding communities.

Maintaining large diameter ponderosa pine over time has been incorporated into the Final Plan; even-aged silvicultural systems have been designed to provide an average tree of 18 inches diameter breast high (DBH), and uneven-aged silvicultural systems have been designed to provide ponderosa pine greater than, or equal to 20 inches DBH. Certain management areas in the Final Plan will also provide large ponderosa pine greater than 20 inches DBH, with some, such as the Old Growth Management Area, providing old growth pine with diameters up to their biological potential.

The residents of Central Oregon have expectations of the Forest and Grassland besides timber harvest. Summer livestock grazing on the Forest and Grassland is an essential component of ranching operations in the area. Economically viable ranches contribute to the local economy's tax base and to the social make-up of local communities. Big game hunting, fishing, wilderness use, and other recreational activities are also important to local citizens. By providing these opportunities, the Ochoco National Forest and Crooked River National Grassland supply both monetary and nonmonetary benefits while satisfying social needs. The predicted levels of these opportunities is also an issue.

The ability of the Forest and Grassland to respond to community wants and needs is constrained by the extent of the resources available, the level of public expectations, and the efficiency of resource management.

#3 What is the Appropriate Level of Livestock Grazing and Intensity of Range Management?

Livestock grazing, and the intensity of range management, remains as a major issue for the management of the Forest and Grassland. A primary concern expressed in the public comment on the DEIS is the past and present grazing impacts to the riparian areas and wildlife habitat on the Forest and Grassland. Some felt livestock grazing numbers could not be maintained or increased while simultaneously attaining riparian rehabilitation. Others believed that the economies of Crook, Harney, and Jefferson Counties are dependent on ranching, and that reductions in livestock numbers would have significant adverse effects. All grazing allotments are used and there is constant pressure to increase the numbers of livestock allowed, or to extend the season of pasture use. Permitted livestock numbers have not varied greatly in the past decade. Some increase has occurred as a result of improved range management practices, making more forage available.

Forage is generally not the limiting factor in managing the number and amount of livestock use. Water is usually the limiting factor. Forage far from water sources may be only lightly utilized, while forage near a water source may receive heavy use.

Conflicts generated by the present level of grazing arise from varied points of interest. Primary conflicts occur when grazing in a riparian area degrades water quality and fisheries habitat, when competition exists between livestock and big game for forage, and when livestock have damaged tree seedlings needed for reforestation. Additionally, livestock can have negative impacts on the aesthetics of recreation sites.

The Forest and Grassland will attempt to resolve these issues through adjustment of the animal unit months (AUM's) provided and the extent of the livestock management and range improvement practices conducted. Livestock management techniques, such as herding, fencing, salt and mineral block placement, and water development, minimize the impacts of grazing. Forage may be increased by prescribed burning, timber harvesting, and grass seeding. Under the proposed Forest and Grassland Plans, the number of livestock using riparian areas will be reduced, or subject to better controls, over time to provide for riparian area improvement. This will be offset by: 1) increasing forage production on transitory range, 2) improved forage production resulting from nonstructural range improvements, and 3) construction of 27 water developments to distribute livestock into areas where forage is available but natural water sources are not.

Currently, the Forest and Grassland provide 75 thousand AUM's annually. The Regional Guide for the Pacific Northwest Region has established a goal of 82 thousand AUM's for the Forest and Grassland to be attained in the next decade. The maximum capability of the Forest and Grassland to provide commercial livestock grazing has been estimated at 110 thousand AUM's annually (maximum livestock benchmark). Other resources will have to be managed at or near minimum levels to attain this level. Much of this potential depends on the construction of additional water developments and intensive management practices.

#4 How Should Riparian Areas be Managed to Meet Various Resource Needs?

Approximately 20,240 acres of the Forest and Grassland are within the riparian influence zone. The riparian area condition is poor along 402 miles of streams (about 50 percent of the riparian areas). Though occupying only two percent of the land base, riparian areas offer great potential for increased resource productivity. Riparian areas are very important as fish and wildlife habitats, and contribute significantly to species diversity. Stream margins frequently contain highly productive timber sites. Livestock utilize the vegetation in riparian areas more heavily than in other areas. Their relatively gentle topography makes riparian areas attractive for road locations. A majority of the Forest and Grassland's recreational use occurs in riparian areas; they are often very scenic and provide a refreshing contrast to the much drier surrounding areas.

Concentrated use in these areas has caused conflicts. Vegetation diversity along many riparian areas is presently low. There is an abundance of grass but a limited presence of trees and shrubs. This has negative implications for fisheries, wildlife, and recreational use of the areas. Some trees that once provided shade have been removed by timber harvests. The primary reason for the lack of vegetation diversity is livestock overgrazing the forage in riparian areas. Overgrazing has reduced water quality, eliminated streamside shrubs, caused soil compaction, accelerated erosion, and broken down stream banks. This conflict is particularly difficult to resolve because these areas are vital to livestock for water, provide palatable forage, and naturally provide relatively cool spots for livestock to congregate.

The present transportation system has also had impacts on riparian areas. Roads in riparian areas can be sources of soil erosion and tend to channel and accelerate water flows. A riparian area's ability to moderate water flows and filter out sediment can be decreased, and stream water quality degraded by sedimentation. Sedimentation and warmer water temperatures caused by lack of shade have caused the water in many streams to fall below State water quality standards.

Generally, the less disturbance that occurs in riparian areas, the better the area condition. However, resource use in riparian areas can be compatible with good riparian condition. The extent of each use, and the mitigation practices employed, largely determine the riparian area condition. Riparian areas are relatively resilient and respond to improvement measures. Rehabilitation efforts and the future management of these areas will be addressed. Presently, opinions differ concerning existing conditions and on the management needed to attain the best combination of riparian area use and future productivity.

#5 What Transportation System Should be Provided to Meet Public, Commercial, and Administrative Access Needs?

Forest and Grassland road system needs continues to be a high interest area - the Forest received 1000 comments on this subject on the DEIS. The comments voiced strong sentiments that road standards are too high and that the number of roads on the Forest is excessive. The comments offered support for the closure of roads following completion of projects, timber sales in particular. There was also support voiced for the closure of roads for the protection of big game, erosion control and reduced maintenance costs. This is a departure from the original comments which opposed the closure of roads and areas to access by motorized equipment. Timber industry observed that the number of roads was not the issue, but if the number of roads open to public travel and open road densities were reduced, other resource objectives could be still be attained.

Off-road vehicle use continues to be a growing concern. The roads issue has been expanded to address general access concerns which includes ORV uses of off road areas. A travel plan for the Forest and Grassland addresses road management concerns and will complement the objectives of the various management areas on the Forest and Grassland. Wildlife habitat effectiveness objectives will be partially met through road restrictions and closures. The number of miles of roads maintained open for public travel on the Forest will decrease nominally in the future as a result of these road restrictions and closures for big game habitat protection, erosion control, and public safety.

In the first decade, 840 miles of road will be maintained for passenger car travel and 2,330 miles will be maintained for high clearance vehicles.

By the fifth decade 850 miles will be maintained for passenger cars and 2,270 miles for high clearance vehicles.

Roads will be closed to protect the investment, to protect public safety, to minimize soil erosion and water quality degradation, and to maintain wildlife habitat effectiveness. In the first decade, 1,560 miles of roads would be closed. In the fifth decade, 2,190 miles would be closed. Closures may be seasonal or yearlong.

#6 Should Habitat be Provided for Increased Populations of Big Game?

Habitat for big game was second only to timber in the number of public comments on the Draft. The public continues to be very interested in the production of elk and deer on the Forest. In particular, there was support voiced for population levels of elk in excess of those proposed by the Draft Plan and Oregon Department of Fish and Wildlife (ODFW) goals. Along with outputs, there was expression of support for the management of big game winter range and the management of road systems to attain habitat effectiveness. The management of habitat for antelope is an issue on the Grassland.

The Forest and Grassland contain significant numbers of mule deer, pronghorn antelope, and Rocky Mountain elk. ODFW has identified the desired deer and elk population levels for the wildlife management units encompassed by the Forest and Grassland. There are approximately 2,300 elk on the Forest now, according to a recent census. ODFW's objective (planning benchmark) is for 2,600 Elk. The ODFW objective for deer and antelope populations has already been attained: approximately 23,000 deer and 750 antelope.

The Forest and Grassland Plans will designate important areas of big game range in four management area allocations on 171,490 acres of the Forest and 35,440 acres of the Grassland. Three of these management areas are big game winter ranges. The Plans provide standards and guidelines for the management of cover and road management that will support elk numbers that meet the population objectives. In these areas, road use and cover would be managed to provide high quality big game habitat. Habitat would support 3,000 elk in the first decade, increasing to 2,870 in the second decade, then declining to 2,690 by the fifth decade due to changes in cover and road access.

The Forest and Grassland have the potential to provide habitat for more elk than presently exist. Benchmark analyses indicate the maximum capability of the Forest and Grassland would produce and sustain 23,000 deer and 4,800 elk. It would take approximately 50 years to reach these levels for elk. The number of deer is about the same as current population estimates due to ODFW management of herd size. The primary factors limiting big game habitat are the quality and amount of big game cover and the extent and use of the road system.

Management for other resources or land uses can enhance big game habitat. Timber management and range improvement practices can improve an area's forage production. Measures intended to rehabilitate riparian areas benefit big game habitat. Lands managed for wilderness, roadless values, or old growth habitat generally provide better big game habitat than lands managed intensively for timber production.

#7 How much Roadless Recreation Opportunity Should be Provided?

Unroaded recreational opportunities generated the third highest number of comments on the DEIS. Public comments focused on Lookout Mountain and the Ochoco Canyons area of the Forest. There was strong sentiment for the retention of existing roadless areas by some, while others challenged the designation as limiting and precluding other uses.

When the issue was originally identified, there were ten areas on the Forest and Grassland that met roadless area criteria. Since then, the Oregon Wilderness Act of 1984 created three wilderness areas on the Forest (Bridge Creek, Mill Creek, and Black Canyon). The roadless area question posed by this issue still needs to be resolved for six other areas: Green Mountain, Rock Creek, Cottonwood Canyon, Silver Creek, Lookout Mountain, and Deschutes Canyon-Steelhead Falls. The remaining area, Broadway, was committed to timber harvest and road construction under existing plans in the interim. Due to its status as a "further planning" area from the RARE II process, the Oregon Wilderness Act directed that a recommendation of non-wilderness be made for the Deschutes Canyon-Steelhead Falls area on the Grassland through the forest planning process.

Allocating areas for unroaded recreation limits the capability of these areas to produce some other benefits. Recreationists that rely on roads for access would not be served by these areas. Lack of immediate access hinders resource management activities and adds to the difficulty of controlling wildfires. Timber harvests are generally not permitted. This limitation results in decreased economic returns from the Forest. In some cases, the inability to manage the timber hinders development of big game habitat.

Lookout Mountain roadless area has received strong interest; specified treatment will be offered in the FEIS. The Rock Creek/Cottonwood Creek area will be dealt with in two new management areas in the Forest Plan in order to address the interest in unroaded recreational opportunities, and the need to make some of these roadless areas available for other resource use opportunities. Cottonwood, most of Rock Creek, and a portion of Silver Creek will be retained as roadless areas and managed for semiprimitive nonmotorized recreation. Green Mountain will be managed as general forest. The Draft proposed semiprimitive motorized recreation which was determined not to be appropriate for the area, and not supported by public comment.

The total wilderness, wilderness study area, and unroaded acreage is 96,228, about 10 percent of the Forest and Grassland (does not include wild & scenic rivers).³⁷Combined, unroaded areas and wilderness will meet the expected demand for semiprimitive recreation until the year 2025. A number of other special management areas have been designated, e.g. Stein's Pillar, which will also contribute recreational opportunities in response to this issue.

Recreation projections for the Ochoco indicate that the demand for unroaded recreation use is continuing to grow, and may exceed the Forest and Grassland's ability to supply such opportunities in the next ten to fifty years.

#8 How Should the Forest and Grassland Manage the Scenic Resources?

Scenic resources continued to receive interest by some publics. The State of Oregon and others expressed concern for maintaining the scenic character or setting over time. Generally the public comments to the DEIS concerned the retention of the scenic corridor along Highway 26. Travelers in the Ochocos often leave with a picture of open ponderosa pine stands interspersed with park-like openings. Other vegetative types are intermingled, but stands of large pine predominate in the primary travel corridors. Scenic corridor management has retained most of these large trees. The extent of visual corridor management across the Forest has been questioned since the large old growth pine is preferred by the local mills, creating pressure to harvest the readily available trees along traveled Forest corridors.

This issue has not been limited to visual corridors. A number of individuals and groups recognize that the visual character of the Ochoco National Forest and the Crooked River National Grassland will change through management over time. Early harvest operations usually removed only scattered individual trees, leaving multistoried stands. More recently, clearcuts have been used to initiate even-aged timber management, while the multistoried stands people have grown accustomed to seeing are being converted to relatively single-storied stands.

The Forest and Grassland Plans will provide a number of scenic corridors where the primary emphasis will meet visual quality objectives to maintain and enhance key scenery. Travel corridors, including major roads, access roads to roadless areas, and a winter sports corridor on the Big Summit District, will be managed for scenic qualities. Scenic corridors will total approximately 40,110 acres, 38 percent of the maximum potential of 106,700 acres. In addition, all management areas for the Forest and Grassland have Forest-wide and management area standards and guidelines which provide guidance on the visual quality objectives (VQO's) and how these VQO's can be met.

3/ Includes designated wilderness, North Fork of the Crooked River Wilderness Study Area, and the total roadless area (using the criteria boundary roadless area figures from Appendix C) less the 650 acres allocated to wild and scenic river designation in Deschutes Canyon 1-14

#9 How Much Old Growth Habitat Should be Provided?

Old growth generated over 1000 comments on the DEIS. A majority of the comments supported a larger allocation for old growth. In addition, there was interest in seeing the individual old growth management area size increased over that in the Draft Plan.

A relatively small component of old growth habitat remains across the entire Forest (approximately 93,800 acres). Past logging practices have significantly reduced old growth ponderosa pine. The Forest's remaining old growth habitat is primarily mixed conifer. This imbalance between amounts of old growth habitat in the mixed conifer and pine types results in a poor geographic distribution of wildlife that rely on old growth habitat.

The retention and management of old growth is a significant issue with timber industry. Industry claims that the old growth resource is a critical part of the total short-run timber supply on the Ochoco National Forest. The allocation of existing old growth blocks to a management allocation for the retention and preservation of old stand conditions would reduce the available supply well below the demand. Timber management activities within the allocation would be limited to treatments which enhance or maintain the desired old growth stand structure. As these stands age, they become increasingly vulnerable to insects and disease. While the mortality of old growth trees provides additional wildlife habitat, the risk of loss from wildfire is increased as woody debris accumulates on the forest floor. These potential losses in old growth areas may or may not detract from their value as wildlife habitat, depending on the extent of stand mortality.

In spite of these risks, old growth areas are a valuable component of the Forest. They provide habitat for approximately 100 wildlife species on the Ochoco. These areas also contribute to big game cover requirements. Soil and water conditions in old growth areas are generally favorable due to the absence of disruptive activities. They are often attractive from a visual standpoint, particularly in the pine types, and may be incorporated as parts of scenic or riparian corridors. Old growth can provide unique habitats for certain species, serve as gene pools, and contribute to diversity.

The Forest has allocated 72stands containing 21,650 acres of old growth to be managed on a "dedicated basis." Of this amount, 20,380 acres are determined to be "suitable" and 1270 acres "capable." Of the 72 stands, seven are within areas allocated to wilderness and RNA's, leaving 19,250 acres actually allocated as dedicated old growth. That old growth dedicated in the management areas for old growth, wilderness, and RNA's amounts to 103 percent of the minimum level estimated to be required by old growth dependent species (21,000 acres), and 23 percent of the maximum old growth available on the Forest (93,800 acres). Out of a total of 1200 acres of existing old growth juniper, the Grassland has 740 acres allocated.

Old growth for the Ochoco National Forest and Crooked River National Grassland has been defined using the Regional definition from the Regional Guide for the Northwest Region, 1984. The size and distribution of areas managed for old growth were designed to meet habitat requirements for the pileated woodpecker, a management indicator species. These areas will also provide habitat for other species dependent upon old growth.

The existing mature stands and designated old growth outside old growth, wilderness, and other special management areas, will be subject to timber harvest. By the year 2030, areas not allocated specifically to the referenced management areas are expected to loose their old growth characteristics.

#10 To What Extent Should Firewood be Provided to meet Demand?

Fuelwood also generated over 1000 comments on the DEIS. A significant portion of this comment came as a form letter response sponsored by forest industry. These comments supported the continuation of fuelwood supplies into the future. The utilization of firewood from the Forest and Grassland has increased many fold in recent years. In years past acquiring firewood was merely a matter of driving out of town and gathering wood from downed logs As competition for wood has increased, the firewood supply has declined. Demand for firewood from the Forest and Grassland is difficult to estimate. Contributors to the overall supply in the areas using Forest and Grassland firewood include the Bureau of Land Management, Deschutes National Forest, Malheur National Forest, private lands, and sawmills that make unused residues available for firewood. Accessibility, size, species, and the price of other forms of energy are other factors influencing demand.

The amount of firewood collected on the Forest and Grassland varies annually. Based on the Forest's firewood permit system, 10,482 cords were removed in 1984. In 1983, 14,137 cords were removed. Accurate estimates of firewood collected prior to 1983 are not available.

Firewood gathering from the Forest provides several benefits: the public gains in terms of reduced energy costs, many people consider firewood collecting a recreational experience, and the Forest benefits through reduced risk of wildfire loss.

Some conflicts relate to firewood gathering. Wildlife snags near roads, including snags left in cutting units, are often at risk from illegal firewood cutters. Similarly, valuable green trees are sometimes felled illegally for firewood. Use of vehicles to gather firewood has caused soil damage in some cases. Logs gathered for firewood means a loss of feeding, nesting, and reproduction sites for numerous wildlife species. Providing firewood after timber harvesting can cause modifications to planned slash treatments; conversely, prescribed burning of slash has been criticized as consuming potential firewood.

The Forest's ability to provide firewood generally varies directly with the amount of timber harvest that takes place. Firewood gathering from other sources, such as wind-thrown trees and juniper, will still occur as a relatively small portion of the total. To meet a portion of the local demand, this plan will continue to make firewood available to the public at levels commensurate with project activity and available access. The Forest and Grassland alone cannot meet the total local demand, which is estimated at 18,000 cords annually.

#11 How Much Habitat Should be Provided for Wildlife Species Dependent on Snags?

The number of snags (standing dead trees) across the Forest is variable. Snags are fairly abundant in mixed conifer stands found mainly on the Forest's north slopes. On the southern slopes, where ponderosa pine stands predominate, snags are relatively scarce. This scarcity is a result of past salvage harvesting and firewood cutting in the ponderosa pine type.

Snags and down logs are used for nesting and/or shelter by 39 species of birds and 23 species of mammals. The absence of suitable nest sites is usually the limiting factor controlling the population of birds that nest in snags. Where snag densities are low, populations of dependent animals are usually also low. When snags eventually fall they become habitat for ground dwelling wildlife and play an important role in the nutrient cycling process. When snags fall across streams they sometimes create small pools that benefit fisheries and riparian conditions.

Opinions vary on the number of snags the Forest needs to manage. Many woodcutters see them as the best possible source of firewood. Salvage operations aimed at converting solid snags into lumber are viable operations. From this perspective, some people feel that snags left for wildlife are a wasted resource.

The Forest and Grassland will be managed to provide snag habitat at levels appropriate for the management objectives for the respective management area. The overall snag level on the Forest and Grassland, 47 percent, is expected to increase over time, with management, to approximately 54 percent in the fifth decade. The snag level should not go below 40 percent for any of the management areas.

#12 To What Extent Should the Forest Provide for Winter Sports Activities?

The primary factor limiting winter sport opportunities on the Forest is access to higher elevations during the winter months. Use levels at accessible areas are sometimes high and conflicts have occurred between recreationists. This has been particularly true on Lookout Mountain, a large, relatively flat-topped mountain currently managed as a roadless area. The mountaintop is a favored area by both snowmobile users and cross-country skiers. There is one major trail to the top and conflict between users sometimes results. The current management direction for the area states:

"No cross country two- or four-wheel motor vehicle travel will be allowed.

Snowmobile use will be permitted in designated areas, at times when it does not conflict with non-vehicle uses.

The primary emphasis will be placed on access by foot or horseback."

The Forest also has requests to manage the Bandit Springs Area for more cross-country skiing opportunities. The Bandit Springs area is located along Highway 26 and provides excellent winter access at the Bandit Springs Rest Area (maintained by the State Highway Division). Currently, a cross-country trail system is managed in the area (approximately 1000 acres in size). There is local interest to further develop the cross-country skiing opportunities in this area.

Additional Issues not Identified in the Original ICO's but Identified as Comments to the Draft or During the Development of Changes From the Draft to the Final

#1 Anadromous Fish

Anadromous fish were not identified as an issue in development of the DEIS and Proposed Forest Plan. Anadromous fish were identified as a concern by several individuals and groups, including a lengthy, technical response from the Columbia River Inter-Tribal Fish Commission (CRITFC). Primary concerns included protection and enhancement of spawning habitat, and the adequacy of the monitoring schedule. Native American groups noted that treaties guarantee protection for anadromous fish habitat.

#2 Historic Trail Preservation -Summit Trail

This issue arose out of a separate study conducted during the interim between issuance of the draft and final documents (Gowan, 1896). The Forest coordinated with the State Historic Preservation Office (SHPO) on details contained in the Final Plan. This trail has also been related to other groups' proposals for an east-west intertie in a cross-state trail system.

#3 Off-Road Vehicle (ORV, ATV, OHV) Use

The off-road issue was one of the 14 original planning issues identified in the scoping phase of the forest planning process. It was dropped as one of the final ICO's; the comments were limited to local problems on the Grassland which were not considered to be of significance to the generation of alternatives for management of the Forest and Grassland. Comments on the DEIS regarding access, both pro and con, concerned road closures. The off-road issue did emerge again during the issue/Final Plans validation phase. Comments were generally opposed to off-road use because of resource impacts and trespass from the National Forest onto private lands.

#4 Round Mountain

The Oregon Natural Resources Council, in comments on the DEIS, asked that a special recreation unit be established for the Round Mountain area. This issue was brought up again by one individual in the validation process.

Summary of Changes Between the Draft and the Final EIS and Plans

Public involvement has been incorporated into the decisions reached in the Final Forest and Grassland Plans; this has been an integral step since the draft documents were released in September 1986. Significant steps were taken during the months of final document preparation to validate that direction in the Final Plan's response to comments received on the Draft. Meetings and contacts with selected groups, individuals, agencies and political leaders were made to:

- 1. Validate public responses received during the process;
- 2. Insure that we interpreted what was said ap propriately; and
- 3. Insure that we did not miss something or overlook stumbling blocks towards success ful implementation.

In response to the comments, new information, and legislation, and where it appeared appropriate, adjustments were made and changes were incorporated into the Final Plans. This was intended to strengthen the Plan decision and build a base of support for effective implementation.

Plan Structures

Draft	The Plan for the Natio one document.	nal Forest and Nation	al Grassland was	incorporated into
	The National Grasslan Forest had 14 manage	id had 8 management : ment areas.	areas in the Draf	t, and the National
Final	Two separate Plans were developedone for the National Grassland, one fo the National Forestand covered by one Environmental Statement.			Grassland, one for itement.
	In the Final, the Gras management areas.	sland has 16 manage	ment areas, and	the Forest has 28
Grassland Draft	<u>Emphasis</u>	# Mgmt Areas	Acres	<u>%</u>
	Timber/Range Wildlife Wilderness Wild/Scenic Rivers Research Riparian	1 1 1 2 2 1	73,510 34,527 2,500 734 87 	65% 31% 2% <1% <1%
Grassland Final	Emphasis Range/Forage Wildlife Old Growth Visual Wild/Scenic Rivers Research (RNAs) Recreation Riparian Facilities	<u># Mgmt Areas</u> 1 3 1 1 2 2 4 1 1	<u>Acres</u> 59,440 35,870 740 560 1370 110 10,770 2,110 <u>540</u> 111,510	% 53% 32% <1% >1% <1% 10% 2% <1%

FEIS Chapter 1

Forest Draft

<u>Emphasis</u>	<u># Mgmt Areas</u>	Acres	<u>%</u>
Timber/Range	1	491,257	58%
Wildlife	2	190,686	22%
Old Growth	1	26,337	3%
Visual	3	51,773	6%
Wilderness	4	37,154	4%
Wild/Scenic Rivers	2	1,930	<1%
Research	1	4,519	<1%
Recreation	3	32,990	4%
Riparian	2	15,484	2%

843,721

Forest Final

<u>Emphasis</u>	<u># Mgmt Areas</u>	<u>Acres</u>	<u>%</u>
Timber/Range	2	499,330	59%
Wildlife	4	174,620	21%
Old Growth	1	19,250	2%
Visual	2	40,110	5%
Wilderness	4	37,330	4%
Wild/Scenic Rivers	2	2,660	<1%
Research	1	4,440	<1%
Recreation	10	48,350	6%
Riparian	1	18,130	2%
Facilities	1	460_	<1%
		844,640	

NOTE: See National Forest Ownership, this section on page 1-37 for explanation of acreage changes from the Draft to the Final.

Summary of Changes

- 1. Separate plans for the National Grassland and the National Forest.
- 2. Refinement in management area allocations.
- 3. Changes in resource emphasis.

Reasons for Change

National Grassland management and direction was overshadowed by the National Forest. The public requested they be separated into two plans.

Additions and changes in management areas (allocations) result from responses to public comments, incorporation of new information, new policies, improved understanding of the processes related to implementation and congressionally designated rivers.

Forest Management and FORPLAN Modeling

Draft	
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Even-aged silvicultural system. General Forest rotation diameter 14-16". Rotation age 90-100 years. Departure (by vol. first decade).

	ASQ		
Decade	All Spp <u>Cu.Ft.</u>	All Spp <u>Bd Ft.</u>	PP <u>Bd.Ft.</u>
1	20 6	123	87
2	19.7	118	82
3	17.8	99	56
4	16.9	93	52
5	16.1	89	55

Final

Even- and uneven-aged system (uneven-aged systems applied to approx. 100,000 acres ponderosa pine). Diameter for even-aged ponderosa pine=18", mixed conifers=16", uneven-aged=20". Rotation age for ponderosa pine=130 years, mixed conifer=90 years. Sustained yield, even-flow (by cu.ft.vol.); declining volume in ponderosa pine after first decade.

	ASQ			
Decade	All Spp <u>Cu Ft.</u>	All Spp <u>Bd.Ft.</u>	PP <u>Bd.Ft.</u>	
1 2	19.0	115.0	82.0	
3 4	19.0			
5	19.0			

FORPLAN Modeling

The changes from Draft to Final have resulted in differences in FORPLAN modeling. The changes in allocations and related management guidelines have resulted in the development of new yield streams for timber and other resources, silvicultural systems, rotation ages, and decade harvest limitations.

New Prescriptions and Yield Streams applied in FORPLAN Model

Uneven-aged timber management applied to ponderosa pine on general forest (20-inch target size).

Uneven-aged timber management applied to ponderosa pine in special areas with 30-inch DBH target size: Lookout Mountain, Stein's Pillar, Deep Creek, North Fork Crooked River.

Uneven-aged timber management applied to mixed conifer in some special areas.

Extended rotation ages and new thinning cycles for ponderosa pine in general forest.

Extended rotation and stricter decade harvest limitations for special areas.

Changes in the percent cover for big game required by allocation.

More reliance on mixed conifer to produce cover vs. ponderosa pine.

Acres and Timber Yield Tables:

Acres - Condition classes (i.e. the amount of pine sawlogs, saplings, etc.) have been updated from the 1983 information used in the Draft to 1988. This was done to more accurately assess timber harvest scheduling and resultant associated outputs and effects.

Timber Yield Tables -Yield tables were updated to reflect the growth that has occurred in the last five years to more accurately determine outputs and effects.

Summary of Changes

- 1. Incorporation of uneven-aged management in ponderosa pine where stand structure, condition, and management objectives allow.
- 2. Larger tree at rotation; general forest ponderosa pine 18-20" versus 14"-16" (wood quality).
- 3. Sustained even-flow in cu.ft.vol. versus departure (on volume basis).
- 4. Maintains relatively high volume of ponderosa pine first decade.

- 5. Large target diameters (27"-30+") for recreation, wildlife and visual emphasis management areas.
- 6. FORPLAN model yield tables, acres, prescriptions and assumptions changed to reflect updated information (see above).

Reasons for Change

Response to public comment for uneven-aged management, growing larger trees, maintaining historic harvest levels in ponderosa pine, sustained yield even-flow vs. departure, improved and updated information.

Economic Analysis

Changes in schedules, outputs, allocations, effects, assumptions and new information will result in different economic effects and outputs in the final documents.

Incorporation of additional resources into the economic analysis overlooked in the draft documents (mineral leases, anadromous fisheries).

Wilderness Study Area

Draft

Proposed recommending 5,200 acres (2,500 FS, 2,700 BLM) in the Deschutes Canyon-Steelhead Falls Wilderness Study Area for wilderness classification.

Final

No additional wilderness proposed. A 7,840-acre Squaw Creek management area emphasizing semiprimitive, nonmotorized recreation, protection of natural features, and vehicle access management incorporates the core of previously recommended wilderness; the majority of the remainder of the draft proposed wilderness was included in the Deschutes Scenic River Corridor classified by the Oregon Omnibus Wild and Scenic Rivers Act in 1988. An eligibility study for lower Squaw Creek for Wild and Scenic Rivers was completed and the potential identified and preserved.

Summary of Changes

The 5,200 acres recommended for wilderness which was centered on Squaw Creek and the Deschutes River Canyon, was changed to a 7,840-acre special management unit centered on Squaw Creek, classification of the Deschutes River and canyon portion under the Wild and Scenic Rivers Act.

Reasons for Change

The Deschutes Canyon-Steelhead Falls area was determined to be too small to be appropriate for and manageable under the Wilderness Act. The Deschutes River and canyon area was classified and protected under the Oregon Omnibus Wild and Scenic Rivers Act.

Public expressed interest for classification of Lower Squaw Creek under Wild and Scenic Rivers Act. A 1,370-acre segment from the Grassland boundary to the confluence with the Deschutes River has been determined to be suitable for designation as a "scenic river" under the Wild and Scenic River System.

Wild and Scenic Rivers

Draft

Segments of North Fork Crooked River, Crooked River, and Deschutes River eligibility studies completed and management units developed to preserve options for river classification.

Final

Segments of North Fork Crooked River, Crooked River, and Deschutes River classified as Recreational or Scenic Rivers under the Oregon Omnibus Wild and Scenic Rivers Act. Lower Squaw Creek eligibility and suitability determination completed. Recommended for designation as a "scenic river" in the Wild and Scenic River System in Alternatives B-Modified and I.

Summary of Changes

Rivers Designated by Congress.

Lower Squaw Creek evaluated and determined suitable for Wild and Scenic Rivers designation. Recommended for designation as a "scenic river" in Alternatives B-Modified and I.

Reasons for Change

Oregon Omnibus Wild and Scenic Rivers legislation. Lower Squaw Creek evaluation conducted based on public comment and legislative hearings related to above Act.

Roadless Areas

Roadless Area	RARE II Total Acres	Draft Allocated to Remain Unroaded	Final Allocated to Remain Unroaded
Broadway	8,680	0	0
Green Mtn.	6,630	7,000	0
Rock Ck/Cottonwood Ck	20,340	19,070	11,820
Silver Ck.	11,670	3,230	3,110
Lookout Mtn	15,260	2,950	15,660
Deschutes Canyon-			·
Steelhead Falls WSA	FS 10,000	2,500	7,840
	BLM 3,240	2,660	
N.Fk.Crooked River WSA	1,300	1,125	1,125
Total (FS Only)	73,880	38,535	39,555

Summary of Changes

- 1. Green Mountain proposal for semiprimitive motorized recreation (the area remaining roadless) was dropped for reasons of no apparent public interest or support. Soil erodibility and slopes found not to be suitable for that use.
- 2. The Rock Creek/Cottonwood Creek area to be managed as unroaded was decreased. A portion of the area which was determined to be economical for timber management was allocated to general forest and unroaded helicopter. Steeper areas were reserved for roadless area management, or helicopter logging, to protect watershed, anadromous fisheries, recreation, and wildlife values.
- 3. Silver Creek area to remain roadless and adjusted to a more manageable boundary along canyon rim.

4. Lookout Mountain was originally designated as a management area in the Ochoco-Crooked River Land Management Plan - 16,581 acres. The original RARE II designation included 15,260 acres. These acreages were further adjusted to 14,273 acres (roadless criteria boundary acres) to reflect changes in management. In the DEIS, the area designated for unroaded recreation was limited to 2,950 acres. In the Final Plan, the Lookout Mountain area to remain unroaded increased from 2,950 acres to 7,550 acres. The area was remapped (see planning process records) to approximate the original unit plan boundary. The difference in acreage is attributable to the inclusion of two old growth patches and the scenic corridor along the Road 42.

Planning for stand treatments will begin in first decade, but no entry will be scheduled.

5. A portion of the Deschutes River Canyon-Steelhead Falls Wilderness Study Area and an additional area outside the WSA in Squaw Creek are combined to form a 7,840-acre management area emphasizing semiprimitive, nonmotorized recreational opportunities and wildlife habitat management. The 5,200-acre draft wilderness proposal was dropped.

Reasons for Change

Response to public comments. Efforts to address the resource values involved in a more specific manner. Implementation concerns.

Lookout Mountain

Draft
2,950 acres to be managed for semiprimitive nonmotorized recreation; 11,323 acres allocated to general forest, and remainder to old growth areas. The top of the mountain closed to snowmobiling.
Final
A 15,660-acre Lookout Mtn. area treated as one management area within which there is a 7,550-acre mountain top unit, and two old growth areas. The 8,110 acres remaining will be managed with emphasis on recreational and wildlife habitat values and maintaining the character of the Forest over time. No entry needs to be planned until site-specific planning is completed. Road access corridors (Brush Creek and independent mine roads) are incorporated into the management unit. The entire area is open to snowmobiles during specific periods.

Summary of Changes

- 1. Treatment of entire Lookout Mountain and access corridors as a management area.
- 2. No entry planned prior to completion of site-specific planning.
- 3. Increase in unroaded mountain top management area from 2,950 to 7,550 acres.
- 4. Lower part of the mountain also managed with recreation, wildlife, and forest health emphasis.
- 5. Open to snowmobiling during specified periods.

Reasons for Change

To respond to public comment, and to address resource values involved in a more specific/responsive manner.

Visual

Draft

The Draft Forest and Grassland Plan, Alternative E-Departure in the DEIS provided for scenic corridor management in three management areas as follows:

Management Area	Visual Quality Objective	Acres Allocated	
Retention Foreground	Retention	15,211	
Partial Retention Foreground	Partial Retention	31,238	
Partial Retention Middlegroun	d Partial Retention	5,324	

These areas included the Highway 26 corridor and other key road corridors.

Final

Forest Roads	Retention	Partial Retention	Tota Preservation Acres
Visual Management Corridors	16,150	23,960	40,110
Round Mountain Trail	1,000		1,000
Highway 26	6,850		6,850
Deep Creek	770		77(
Bandit Springs Recreation Are	a 1,580		1,580
Dispersed Recreation Sites	2,060		2,060
Developed Recreation Sites	1,810		1,810
Summit National Historic Trail	5,760	3,760	170 9,560
Lake Billy Chinook View Area	560		560
Total Acres	<u>36,540</u>	27,720	<u>170 64,300</u>

FEIS Chapter 1

Summary of Changes

- 1. Immediate/foreground viewing area around recreational developments (campgrounds) assigned a visual management objective.
- 2. The acreage with visual management objectives increased from 46,449 in the Draft EIS to 64,300 in the Final. The width of the viewing corridor used in calculations was changed from > 2,640 feet to 1,200 feet.
- 3. Entire Summit National Historic Trail corridor was assigned a visual management objective relative to cultural aspects of the particular trail segment.
- 4. Round Mountain National Recreation Trail management corridor reduced in width from > 2,640 feet to 1,200 feet
- 5. Added 560 acres of viewing area from Lake Billy Chinook reservoir on the National Grassland.
- 6. No middle ground viewing areas allocated as management areas.
- 7. All management areas assigned a visual quality objective.

Reasons for Change

To incorporate visual management considerations in important foreground viewing areas in a more balanced manner. New information. Discussions with the State of Oregon.

General Recreation

······································	
Draft	No camps or designated ATV routes.
Final	New horse camps and two designated ATV routes.
Draft	No allocation of dispersed recreation site management. Discussed in general.
Final	Allocation of 686 sites (3.1 acres/site) across the Forest and Grassland for dispersed recreation - based on Code-A-Site and other inventories on file with specific management direction.

Drait	Bandıt Springs winter recreation sports area identified.
Final	Bandit Springs recreation management unit (1,580 acres) allocated; deals with all-season recreational activities.
Draft	Restricted all motorized use on Lookout Mountain summit.
Final	Lookout Mountain open to snowmobile use in winter.
Draft	No recognition of special features or recreational attractions (other than roadless areas, developed recreation, and wildernesses).
Final	Allocation of additional areas emphasizing recreational features or attractions and dispersed recreational opportunities, Stein's Pillar (1,070 acres), Hammer Creek (2,560 acres), Deep Creek (770 acres), Lookout Mtn. (15,660 acres).
Draft	No identification of recreational attractions and developments on the National Grassland. Summit National Historic Trail would be interpreted for public enjoyment.
Final	Identifies and allocates the Summit Trail National Historic Route, with 3 different levels of management intensity per various segments (9,560 acres). Management area allocations made for Haystack Reservoir, Rimrock Springs Wildlife Viewing Area, and Cove Palisades State Park.

Summary of Changes

D----

- 1. Increased recognition of importance of dispersed recreational activities on the Forest and Grassland.
- 2. Incorporation of existing recreational attractions, developments, cultural resources and special features not allocated in the Draft.
- 3. Lookout Mtn. would remain open to snowmobiles.

FEIS Chapter 1

Reasons for Change

Improved and more complete information, public comment, and national emphasis (recreation strategy).

Wildlife

Old Growth	
Draft	
	26,400 acres allocated; approximately (58% "suitable," 48% "capable") on National Forest only.
Final	
	21,650 acres old growth allocated (approximately 95% "suitable," 5% "capable").
	1,000 acres of riparian area is recognized as connective habitat between some old growth areas. The connective habitat is allocated in the riparian prescription.
	740 acres of old growth juniper allocated on the Grassland.

		DECADE					
ALLOCATION/EXISTING	UNIT OF MEASURE	1st	2nd	3rd	4th	5th	
Allocated to Old Growth Management Area 1/	Acres	19,990	19,990	19,990	19,990	19,990	
Unallocated But Preserved Old Growth 2/	Acres	20,500	20,500	20,500	20,500	20,500	
Unallocated Old Growth with No Programmed Harvest 3/	Acres	17,100	17,100	17,100	17,100	17,100	
TOTAL EXISTING OLD GROWTH 4/	Acres	93,800	83,900	74,200	64,500	55,100	

TABLE 1-1		
OLD GROWTH ALLOCATED AND EXISTING ON THE FOREST A	AND	GRASSLAND

1/ Old Growth Management Areas F6 and G5 (includes capable acres)

2/ Wilderness, Wilderness Study Areas F1, F2, F3, F4

3/ Existing Old Growth In Unroaded Management Areas with no programmed harvest F5, F8, F10, F11A, G5 F18, F19, F20, F21, F22, F23, F24, F25, F26, F27, and F28 (from FORSUM for Alternative I)

4/ Total Existing Old Growth from 1987-1988 Inventory This does not include 1,270 acres allocated to old growth but not presently old growth and 1,200 acres of existing juniper old growth

Winter Range Draft	
	76,000 acres of big game winter range to meet Oregon Department of Fish and Wildlife management objectives.
Final	
	99,570 acres of big game (deer/elk) winter range allocated, but redistributed spatially across the Forest and Grassland.
	Identified big game winter range that was not necessary to meet ODFW big game management objectives and therefore, not allocated as winter range, but recognized as a separate management situation called "general forest/winter range," 107,360 acres.
	Added 22,700 acres to area identified as antelope winter range on the Grassland.
Summer Range	
Durft	
Draπ	154,100 acres were allocated to big game summer range with specified amounts and quality of cover for optimum big game habitat.
Final	
	No areas specifically allocated for big game summer range. Big game habitat requirements are treated throughout the general forest area.
	Bug-proofing of some ponderosa pine stands, if done, would reduce big game habitat effectiveness due to the inability of those stands to provide cover.
Snags	
Draft	
	Specific snag management levels were set by management area, which averaged out to an overall forest level of 55 percent of the potential population for snag dependent species.
Final	
	Specificsnag management levels by management area average 47 percent of the potential population level in the first decade, and reach 54 percent by the fifth decade.

Eagle Roosts	
Draft	
	Management direction provided to preserve the integrity of actual and potential bald eagle winter roost sites, but none were specifically identified.
Final	
	Eight bald eagle winter roosts are identified. Two are not shown on the map because they are included within old growth areas which have more restrictive management prescriptions.
	Site specific management plans for each eagle roost area will be developed in fiscal year 1989 and 1990.
Hammer Creek	
Draft	
bran	No special management designated in Hammer Creek except for an old growth area.
Final	
	A 2,560 acre management area is allocated for wildlife and recreation emphasis. It includes an old growth stand and includes a variety of habitat types.
Road Density	<u> </u>
Draft	
	Road density averaged four miles per section in timber/range emphasis and two miles per section in big game emphasis.
Final	
	Road density averaged three miles per section in general forest and one mile per section seasonally in winter range.
Modeling Assumption	Habitat Effectiveness for Elk
Dran	Assumed potential is four elk per square mile in ponderosa pine types; 10 per square mile in mixed conifer; average six per square mile.
Final	Assumed potential is six elk per square mile in ponderosa pine types; 15 per square mile in mixed conifer, average nine per square mile.

Summary of Changes

- 1. Reduction of total area allocated to old growth, but increase in quality ("suitable" vs. "capable") of that dedicated, and distribution across the Forest and Grassland improved. Application of concept of "connective habitat." Increased recognition of importance of old growth occurring within other management areas (e.g. wilderness, Lookout Mtn., Stein's Pillar, Deep Creek, etc.).
- 2. Allocation of old growth jumper on the National Grassland.
- 3. Improved spatial distribution of winter range allocations.
- 4. Additional acres of antelope winter range area identified and allocated on the Grassland.
- 5. Allocation of general forest winter range, in addition to winter range resulting from improved habitat effectiveness.
- 6. Elimination of big game summer range allocation and consideration of big game habitat requirements in standards and guidelines for all management areas.
- 7. Snag management level increased on certain wildlife and recreation management areas created since the Draft, but an overall drop in potential population level due to big game summer range allocation change (noted above).
- 8. Specific identification and management direction for bald eagle winter roosts.
- 9. Allocation of a Hammer Creek Management Area with an emphasis on wildlife habitat management.
- 10. Modeling assumptions for habitat effectiveness changed based on new information from ODFW.
- 11. Emphasis on maintaining habitat with quality and quantity of cover and road density comprising the basis for rating habitat effectiveness.

Reasons for Change

Public comments. Consultation with Oregon Department of Fish and Wildlife. Improved information and intent to improve the ability to implement.
Grazing Management

Draft	
	Forage utility standards were broken out by slope class and meadows for each
	management area. They generally were the same, except for those in the
	Riparian Management Area which were more restrictive.
Final	
	Forage utilization standards developed by the Region for east-side Forests are used. There is one set of standards for riparian areas and another set for all other management areas not excluded from grazing. The standards are based on vegetation type, range condition, and Forest and Range Experiment Station (FRES) management strategies.
Draft	
	Allotment improvements were considered with emphasis on water develop- ments across the Forest to improve utilization and distribution.
Final	
	A system for prioritizing range allotment planning needs and a program estimate for riparian improvements are established on an allotment by allotment basis.

Reasons for Change

Public comments. Provision of means to more effectively address the allotmentspecific nature of concerns relating to grazing management, and to tier allotment management planning to the Forest and Grassland.

Travel/TransportationPlanning

Draft

All areas on the Forest and Grassland would be open unless otherwise designated, as determined by other management objectives. The ORV opportunities and closures were outlined in the DEIS (pg. 156), and in the travel plan map published with the DEIS.

Final	Travel access routes and areas designated with respect to management unit objectives.
	Two designated ORV trails established, one in the Henderson Flat area on the Grassland and one on the Prineville Ranger District.
Draft	Allocated an area on Green Mountain to semiprimitive motorized recreation. See road densities discussion under wildlife, pg. 1-30
Final	Changed Draft proposal for semiprimitive motorized recreation on Green Mountain to General Forest.

Summary of Changes

- 1. More specificity on area closures and designation of routes or roads within managements areas.
- 2. Refers ORV trail designation to project level implementation.
- 3. Additional emphasis on ORV management and control.
- 4. Increased emphasis on improved road management with resultant reduction in open road density.

Reasons for Change

Public comment. Coordination and attainment of other Forest management objectives, e.g. improvement of elk habitat effectiveness, reduction of visual and on-site impacts, and other special area objectives.

Riparian

Draft

Two allocations or prescriptions: "Acceptable" and "Excellent." The latter was assigned to all anadromous fish streams and other high value fish streams.

Final	All streams will be managed under one prescription - "Excellent."
	Analysis and scheduling of need for treatment is based on a recently updated (1987) stream condition inventory.
Draft	No "connective habitat" identified or allocated.
Final	
	Riparian corridors on approximately 40 miles (1,000 acres) of high value streams have been expanded to offer additional protection to these streams and to enhance "connective wildlife habitat."

Summary of Changes

- 1. Provides a simplified and more direct approach riparian area manage ment planning and analysis will be made compatible with stream condition.
- 2. Allotment management planning will have more detailed direction and objectives.
- 3. Provides a system for prioritizing range allotment planning needs on the Forest.
- 4. Introduces the concept and value of connective habitat.

Reasons for Change

Clarity in communicating planning details. Responsive to public, agency and internal comment. Provides specific information on objectives and impacts affecting allotment management and planning

Utility Corridors

Draft

Utility corridors are addressed in general terms in the Forest-wide Standards and Guidelines.

Final

Existing utility corridors (rights-of-way) are designated as a management area, 460 acres, in the Grassland Plan. Incorporates Federal Power guidelines and requirements (Western Regional Corridor Study, 1986).

Land Adjustment

Draft	The land adjustment plan shows four categories of land.
Final	A fifth category is added: areas where Congress has directed the Forest Service to acquire non-Federal lands for a designated purpose. The Deschutes Scenic River and the North Fork Crooked River Scenic Corridor fall into this category.
	The land adjustment maps are more detailed and based on recent analysis. Lands are placed in adjustment categories according to management area and priority.
Draft	"Consolidate ownership of Cove-Palisades State Park area" is listed as a land adjustment priority.
Final	The issue of ownership patterns for Cove-Palisades State Park is deferred and opportunities for recreation management "partnerships" explored.

National Forest Ownership

Draft	
	National Forest ownership totaled 955,100 acres: 843,721 acres of National Forest, and 111,379 acres of National Grassland.
Final	National Forest ownership totals 956,150 acres: 844,640 acres of National Forest, and 111,510 acres of National Grassland, due to land exchanges which have occurred since the Draft was prepared.

Minerals and Energy

 Draft	
	Oil and gas leasing activity planning was based on the Mineral Leasing Act of 1920 and the Mineral Leasing Act for Acquired Lands of 1947.
Final	
	The Federal Onshore Oil and Gas Leasing Reform Act of 1987 changes the way oil and gas leasing will be administered. Regulations governing leasing proce- dures are expected to be finalized in late 1989.
Droft	
Dian	Outputs for minerals activities were not adequately addressed in the DEIS (Table IV-6).
Final	
	Outputs for oil and gas leasing, geothermal leasing, mining claim location and common variety mineral production are discussed in the FEIS.
	<u></u>
Draft	The economic analysis does not include revenues from oil and gas leasing.
Final	
	The economic analysis has been updated to include oil and gas leasing revenues.
Draft	
	The issue of providing a mining mineral inventory was deferred for resolution outside the Forest Plan.
Final	
	A mineral potential map and mineral inventory were prepared.
Draft	Approximately 80 percent of the Forest and Grassland were leased for oil and gas.
Final	
	Forest and Grassland area available for leasing is similar, but only approximately 10 percent of the Forest and Grassland are under lease, due to changes in oil prices.

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Draft	No leasing would be allowed on administrative sites.
Final	Leases will be issued with a "no surface occupancy" stipulation on administrative sites.
Draft	Leases would be issued with some restrictive stipulations in old growth areas.
Final	Leases will be issued with a "no surface occupancy" stipulation in old growth areas.
Draft	Approval for mining operations will be given when concerns are mitigated in a responsible and responsive manner.
Final	Under the mining laws, claimants are entitled to access and develop their mining claims. Operating plans will include reasonable and operationally feasible requirements for timely and effective coordination with other resources.

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Chapter 2

Alternatives, Including Proposed Action

CHAPTER 2 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

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Chapter 2

Alternatives, Including the Proposed Action

Introduction

This chapter is the heart of the Environmental Impact Statement (EIS). It presents alternative ways of managing the Ochoco National Forest and displays the resource outputs and environmental effects of those alternatives. It also describes how alternatives were developed, how they compare to each other, and how they compare to the way the Forest is currently being managed.

This chapter has three main parts. The first section summarizes the process used to develop the alternatives. A detailed presentation of this analysis is given in Appendix B, Description of the Analysis Process. In the second section, all the alternatives carried forward to the Final EIS are then described in terms of their purpose and management emphasis. In the third, the alternatives are compared to each other in terms of outputs, responsiveness to issues and concerns, emphasized resource outputs, environmental effects, and economic costs and benefits which would occur with each alternative. This information is displayed in tables within this chapter.

Summary of Changes Between the DEIS and FEIS

In this chapter, the changes from the DEIS to this FEIS include a number of alternatives being eliminated from further study, the modification of several draft alternatives, the addition of the "No Change" alternative and the formulation of a new alternative. The comparison of the alternatives almost exclusively concerns the issues, concerns, and opportunities (ICO's) and the indicators of responsiveness.

A more thorough discussion of the changes from the DEIS to this FEIS is presented in the Summary to this FEIS.

Alternatives

Forest management can vary by what is done, where it is done, and when it is done. These varying combinations of what (management activities), where (management areas), and when (activity schedules) result in different resource outputs and environmental conditions, while meeting the unique objectives of each alternative.

Each alternative is a unique combination of these three elements: management activities, management areas, and activity schedules. As a result, each alternative generates a different mix of goods and services for the public, and a different combination of resource outputs, land uses, and environmental effects.

The basis for alternatives are the public issues, management concerns, and resource use and development opportunities and the manner in which they respond to the ICO's. Laws and regulations also require that certain alternatives, which are based on national or regional issues and concerns, are included in the process. Given those alternatives required by law or regulation, and based on the issues, concerns and opportunities identified in this planning process, an Interdisciplinary Team (IDT) formulated alternatives covering a broad range of possible actions. The alternatives represent a variety of ways to respond to the issues, concerns and opportunities.

This chapter also discusses "benchmarks." Benchmarks are calculations of the maximum potential output, production, or economic opportunities for the Forest. They are used to define the decision space and range of alternatives that can be developed for particular resources.

Eleven alternatives were developed for the DEIS based on the public involvement process described in Appendix A to this FEIS. Because of the appeals discussed later in this chapter (see pg. 2-21), an additional alternative, the No Change Alternative (Alternative NC) was developed in a Supplement to the DEIS, October 1988. This alternative represents management of the Forest according to the 1979 Timber Resource Plan and unit plans. This alternative used a different set of criteria for acres of land suitable for timber harvest.

An additional alternative was developed to reflect

public comment and new information on the DEIS. This alternative is also a product of close coordination with the State of Oregon in the development of their proposed management strategy for the Forest and Grassland. Four of the alternatives in the DEIS were modified, updated and carried forward to this FEIS. Ten of the alternatives displayed in the DEIS were eliminated from further detailed analysis in this FEIS The disposition of the alternatives is also illustrated in Table 2-1. In addition, further discussion of required, departure, the "No Change," and new alternatives, and also those alternatives eliminated from further discussion can be found on pages 2-18 through 2-21.

DISPOSITION OF ALTERNATIVES CONSIDERED IN THE FINAL

								AL	TERN/	ATIVES						
TREATMENT	A	в	B Dep	B Mod 1/	С	C Mod	D	E	E Dep	F	G	Н	H Dep	I Pre 2/	NC	CD BNCH 3/
Detailed Alts in DEIS DEIS Alts Detailed in FEIS DEIS Alts Eliminated in FEIS New Alts Detailed in FEIS	x x	x x	x x	×	x x	x	x x	x x	X X	x x	x x	x x	x x	x	x x	X X

/1 Alternative B-Mod represents evolution and change of Alternative B-plus proposed by timber industry Alternative B-Mod is a new industry alternative it is different than B-Departure in the Draft, the latter of which was much the same as Alternative B

/2 Preferred Alternative I

/3 Current Direction Benchmark with National Forest Management Act (NFMA), Alternative A in this FEIS

Formulation of Alternatives - The Process

Overview

The purpose of forest planning is to formulate and select an alternative that most nearly maximizes net public benefits. Net public benefits are defined as 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....consistent with the principles of multiple use and sustained yield" (36CFR 219.3).

Forest planning and the National Environmental Policy Act (NEPA) are both issue-driven processes. Maximization of net public benefits and responding to issues are, therefore, related. Net public benefit is not to be confused with present net value (PNV), which is the difference between discounted costs and discounted benefits. The Preferred Alternative may not have the highest PNV but should have the highest net public benefit in the judgement of the responsible official.

Both priced and non-priced outputs and effects must be considered when addressing net public benefits. Priced outputs are those for which there is an established value. It may be a market value such as that assigned to timber, developed recreation, minerals, and range, or a non-market value such as that assigned to dispersed recreation, wildlife, wildlife related recreation, and wilderness recreation. Non-priced outputs are those which have no established value, such as scenic quality, cultural resources, and water quality. The formulation of a range of alternatives involves, therefore, an economic evaluation of priced outputs, and a subjective evaluation of the amenities the Forest offers, such as scenery, water quality, and recreation opportunities.

The planning regulation (36 CFR 219 12(e) and (f)) requires an analytic process, which includes an inspection of various minimum and maximum production levels and economic factors. In addition, the range of alternatives must respond to management concerns and include alternatives which reflect current and national programs, such as RPA.

Some alternatives represent management of the National Forest or Grassland to maximize the production of priced commodities such as timber and forage, whereas other alternatives could emphasize non-priced amenities, such as dispersed recreation, wildlife, and scenic qualities. One alternative, the No Action Alternative, reflects the objectives of the Forest Service National program. Some alternatives, departure alternatives, have an altered timber harvesting schedule to meet specific needs.

Alternatives must be responsive to public issues, management concerns, and resource opportunities. Finally, the alternatives must reflect resource capabilities, in terms of both limitations and potentials, of the many different areas of the Forest. The potential of the Forest to produce goods and services is compared to projected demand and supply potentials for those same goods and services in Central Oregon. The ability of the forest to supply goods and services in response to society's demands was determined in the Analysis of the Management Situation (1984) and is reflected in the range of alternatives in this FEIS. In summary, the Interdisciplinary Team formulated the alternatives using the issues and concerns as the starting point, considering the Forest's capabilities, and addressing both priced and non-priced resource outputs to create a range of alternatives.

From this range of alternatives, a preferred alternative is selected. The preferred alternative is the alternative which, in the opinion of the Regional Forester, comes closest to maximizing net public benefit as defined above and is responsive to public issues. The process and chronology for the preparation of the Forest and Grassland Plans follows:

Year	Process
1980	Notice of Intent Published in the Federal Register
1981	Preliminary Identification of Issues and Con- cerns
1982	Forest Inventory Completed
1984	Analysis of Management Situation
1985	Formulation and Analysis of Alternatives
	Evaluation of Alternatives
	Draft Preferred Alternative Selection
1986	Draft Environmental Statement Published
	Public Comment Period
1988	Supplement to DEIS Published
1989	Public Comment Period for SEIS
	Evaluation of Public Comment
	Formulation, Analysis and Modification of Final Alternative

Final Plan Published

1990 Plan Implementation, Monitoring and Evaluation

Resource Inventories

The physical inventory of the forest resources and their productive potential is a major part of the analysis process. Resource information was collected on a common map base, with different layers developed for various resources and inventory components. Inventories of the character, potentials and limitations of the Forest and Grassland were conducted. Areas of the Forest and Grassland were with similar physical and biological characteristics were stratified into "capability areas." These homogeneous areas are expected to have a somewhat uniform response to any particular management prescription. The inventory and the development of capability areas and their function in the analysis process is further discussed in Appendix B of the this FEIS.

Public Issues, Management Concerns and Opportunities (ICO's)

Public issues, management concerns and opportunities are the beginning basis of forest planning. The ICO's drive the planning process. To develop alternative ways of managing the land and resources, it is necessary to determine what is important to the public who benefit from the Forest. In the Fall of 1980 the Forest began to identify the principal issues to be addressed in the draft Forest Plan. A decision was made to build on the previous issues identified for the existing unit plans. Interest groups were used as a starting point and were invited to identify preliminary issues that could be expanded or refined by a broader audience. These key interest groups met with the Forest Interdisciplinary Planning Team (IDT) at six meetings held during the fall, 1980. From the meetings, 125 preliminary issues, concerns, and opportunities (ICO'S) were identified. The IDT then consolidated these ICO's into 60 issues and submitted this list to the public along with a request for response. In addition, public involvement was requested through various news media. The interdisciplinary team also conducted six public meetings to gather additional public comment. The information that was gathered was used to consolidate the issues into resource and/or land use topics. Seventeen issues were developed from this exercise. Further consolidation resulted in twelve issues being displayed in the DEIS

Since those meetings, the Forest has used a variety of methods to keep its employees and the local communities informed of the planning process. We published periodic articles and special editions in our Forest and Grassland report (we prepared and distributed a Forest Plan Report). During the summer and fall of 1985 we had multi-resource media coverage, providing information and education on Forest Management. Through a networking process, each Management Team member has been contacting key individuals in our local communities, informally discussing Forest management and the planning effort and validating our course of action for the final Forest and Grassland Plans.

Eleven alternatives were drafted for public review in the DEIS in September 1986. Alternative E-Departure was selected as the preferred alternative. During the 90-day comment period, the Forest received over 2,150 responses, which included over 20,000 specific comments. The Forest considered this public input and modified the issues, modified some of the alternatives and created two new alternatives.

A Supplement to the DEIS was prepared in response to Forest Industry taking issue with some of the methods used in forest planning by National Forests in the Pacific Northwest. They were concerned with how the "No Action" Alternative was described, and the methods used to address Forest planning management requirements. The Supplement to the DEIS described a new alternative, Alternative NC, and analyzed alternative levels of management requirements. The Supplement was published in October 1988, and the 90-day public review period ended January 17, 1989. The Forest received nearly 200 letters in response to the Supplement. The results of the public response period for the Supplement are also discussed in Appendix I of this FEIS.

Significant steps were employed during the last 3 months of final document preparation to insure that direction in the Final Plan responded accurately to comments received on the Draft. Meetings were held, and contacts made with selected groups, individuals, agencies and political leaders in order to:

Validate public responses received during the process;

Insure that we correctly interpreted what was said;

Insure that we did not miss something or overlook stumbling blocks towards successful implementa-

tion; and

Set the stage for implementation of the Plan.

This networking followed our efforts in seeking broad public review of our draft documents. During this time, 39 meetings have been held with more than 289 citizens, and 69 interest groups or agencies. In response to this effort, when appropriate, adjustments were made to the final planning documents.

The details of the public involvement process and the development of the ICO's is further discussed in Appendix A. The changes between the DEIS and FEIS are highlighted in the Summary and in the Record of Decision.

Analysis of the Management Situation (AMS)

The document titled "Analysis of the Management Situation," Ochoco NF and Crooked River National Grasslands, Nov. 1984, provides a description of the Forest's environment and an analysis of the Forest's potential to provide both market and nonmarket resources and services (see Ochoco National Forest planning records).

Information from the AMS was used to further define the alternatives presented in the DEIS and this FEIS. Specifically, the AMS was used to:

Define the maximum potential of the Forest to produce resource outputs for selected market and non-market goods.

Evaluate the complementary and conflicting relationships between market and non-market goods the Forest could produce.

Analyze the efficiency and implications of constraints placed on the alternatives to meet legal, policy, or resource management requirements.

Identify the range within which alternatives could be developed.

Determine if current management direction is satisfactory or if there is a need to change.

 TABLE 2-2

 RESOURCE SUPPLY AND DEMAND PROJECTIONS FOR THE GRASSLAND

		Decade						
Resource/ Activity	Unit of Measure	1st Decade	2nd Decade	3rd Decade	4th Deacde	5th Decade		
FORAGE Supply	Thousand AUM's							
Current Direction Maximum Potential Grassland Plan Demand		21 3 29 18 22 5	21 3 29 19 22.5	21 3 29 19 22.5	21 3 29 19 22.5	21 3 29 19 22 5		
FUELWOOD Supply Current Direction Maximum Potential Grassland Plan	Cords	300 12500 400	300 12500 400	300 12500 400	300 12500 400	300 12500 400		
MINEFALS Oll & Gas Supply	Thousand Acres							
Current Direction Maximum Potential Grassland Plan Demand		72 72 72 72 72	17 93 17 17	17 93 17 17	17 93 17 17	17 93 17 17		
Geothermal Supply	Thousand Acres							
Current Direction Maximum Potential Grassland Plan Demand		0 174 0 0	0 174 0 0	0 174 0 0	0 174 0 0	0 174 0 0		
Nonenergy Minerals	Thousand Acres							
Current Direction Maximum Potential Grassland Plan Demand		0 0 0	1 1 1 1	3 3 3 3	3 3 3 3	3 3 3 3		
RECREATION Developed Recreation Supply	MRVD s							
Current Direction Maximum Potentiai Grassland Plan Demand		28 8 28 8 28 8 13 7	28 8 28 8 28 8 15 4	28 8 28 8 28 8 16 7	28 8 28 8 28 8 18 3	28 8 26 8 28 8 19 9		
Roaded Natural and Rural Supply Supply Current Direction Maximum Potential	MRVD's	37 8 37 8						
Grassland Plan Demand		37 8 111 4	37 8 122 6	37 8 132 4	37 8 143 3	37 8 155 2		
Semiprimitive Motorized Supply Current Direction Maximum Potential Grassland Plan Demand	MRVD's	0 0 12	0 0 0 1 3	0 0 13	0 0 15	0 0 0 16		
Semiprimitive Nonmotorized Supply Current Direction Maximum Potential Grassfand Plan	MRVD's	26 32 32	26 32 32	26 32 32	26 32 32	26 32 32		

Rescurce/ Activity	Unit of Measure	1st Decade	2nd Decade	<i>3rd</i> Decade	4ih Deacde	<i>5th</i> Decade
Fishing Supply Current Direction Maximum Potential Grassland Plan Demand	MRVD's	23 1 23 2 23 2 23 5	24 9 26 3 26 3 26 3	27 0 28 4 28 4 28 4 28 4	29 4 30 8 30 8 30 8	32 2 33 6 33 6 33 6
Hunting Supply Current Direction Maximum Potential Grassland Plan Demand	MRVD's	57 57 57 Unknown	56 56 56 Unknown	52 62 54 Unknown	53 62 54 Unknown	53 62 54 Unknown
ECONOMIC AND SOCIAL	Change In Jobs from Current Situation					
Supply Current Direction Maximum Potential Grassland Plan		9 10 9	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
PAYMENT TO COUNTIES Supply Current Direction Maximum Potential Grassland Plan	MM\$	03 03 03	03 03 03	03 03 03	03 03 03	03 03 03
WILDLIFE Deer Winter Range Carrying Capacity	Thousand of Wintering Animals					
Supply Current Direction Maximum Potential Grassland Plan		43 43 43	32 32 32	22 22 22	22 22 22	22 22 22
Antelope Winter Range Carrying Capacity	Hundreds of Wintering Animals					
Current Direction Maximum Potential Grassland Plan		16 35 35	16 35 35	16 35 35	16 35 35	16 35 35

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NOTE. Current Direction in this table is the No Action alternative which is Alternative A

MRVD - Thousand Recreation Visitor Days MM\$ - Million Dollars

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 TABLE 2-3

 SUMMARY OF SUPPLY AND DEMAND PROJECTIONS FOR THE FOREST

	Average Annual for Decade						
Resources	1	2	3	4	5	Source of Information	
ECONOMIC AND SOCIAL CHANGE IN JOBS FROM CURRENT SITUATION							
Current Direction Maximum Potential Forest Plan	48 224 109	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	Alternative A Independent Estimates Alternative I	
PAYMENT TO COUNTIES (MM \$)							
Supply Current Direction Maximum Potential Forest Plan	60 49 48	53 N/A 56	N/A N/A N/A	N/A N/A N/A	51 N/A 54	Alternative A Maximum PNV Benchmark Alternative I	
FIREWOOD (M CORDS) Supply Current Direction Maximum Potential Eccest Plan	140 150 130	124 140 120	12 0 13 0 11 0	120 130 110	116	Alternative A Timber Benchmark Alternative I	
Demand	180	180	180	18 0	18.0	Independent Estimate 1/	
RANGE (MAUM) Supply Current Direction Maximum Potential Forest Plan Demand	57 8 68 0 58 0 83 0	57 6 65 7 62 5 83 0	63 7 75 6 66 6 83 0	64 9 75 9 63 9 83 0	65 2 76 3 65 6 86 0	Alternative A Range Benchmark Alternative I RPA 2/	
RECREATION (MRVD) Developed Recreation Supply Current Direction Maximum Potential Forest Plan	224 5 261 3 261 3 118 1	224 5 261 3 261 3 130 5	224 5 261 3 261 3	224 5 261 3 261 3	224.5 261 3 261 3	Alternative A Recreation Benchmark Alternative I Independent Estimate 3/	
Posted Natural and Pural Supply	1101	130 5	1450	100 0	1/20		
Supply Current Direction Maximum Potential Forest Plan Demand	1099 3 1139 4 1067 9 262 4	1099 3 1139 4 1067 9 288 8	1099 3 1139 4 1067 9 312 2	1099 3 1139 4 1067 9 337 6	1099 3 1139 4 1067 9 365 0	Alternative A Maximum PNV Benchmark Alternative I Independent Estimate 3/	
SEMIPRIMITIVE MOTORIZED SUPPLY Supply Current Direction Maximum Potential Forest Plan Demand	0 25 9 0 16 8	0 259 0 183	0 259 0 200	0 25 9 0 21 7	0 259 0 235	Alternative A Recreation Benchmark Alternative I Independent Estimate 3/	
SEMIPRIMITIVE NONMOTORIZED SUPPLY Supply Current Direction Maximum Potential Forest Plan Demand	22 5 65 1 44 0 32 2	22 5 65 1 44 0 35 3	22 5 65 1 44.0 38 5	22 5 85 1 44 0 42 0	22 5 65 1 44 0 45 7	Alternative A Pecreation Benchmark Alternative I Independent Estimate 3/	
FISHING Supply Current Direction Maximum Potential Forest Plan Demand	28 7 28 7 28 7 28 7 47 8	31 9 33 1 33 1 57 3	34 1 35 3 35 3 61 4	38 5 37 7 37 7 66 0	39 2 40 5 40 5 71 0	Alternative A Wildlife Benchmark Alternative 1 Maximum PNV Benchmark	
HUNTING Supply Current Direction Maximum Potential Forest Plan Demand	82 5 79 8 79 1 89 9	80 6 79 8 77 9 98 1	75 1 89 1 78 4 108 8	77 0 87 3 77 7 108 8	76 2 88 8 75 5 108 8	Alternative A Wildlife Benchmark Alternative ! ODFW	

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Resources	1	2	з	4	5	Source of Information
BIG GAME DEER (1000 DEER) Supply Current Direction Maximum Potential Forest Plan	18 3 18 3 18 3	ODFW 4/ ODFW ODFW				
ELX Supply Current Direction Maximum Potentiat Forest Plan Demand	3370 3075 3000 2560	3160 3075 2900 2560	2570 4070 2900 2560	2775 3880 2800 2560	2690 4040 2600 2560	Alternative A Wildlife Benchmark Alternative I ODFW 5/
TIMBER (MMCF)(ASQ + SALVAGE) Supply (All Species) Current Direction Maximum Potential Forest Plan Supply (Ponderosa Plne) Forest Plan Demand State of Oregon Forest Service	21 2 23 7 19 8 19 0 25 0	20 6 22 8 19 5 19 6 25 0	20 6 22 1 19 2 19 7 25 0	20 5 22 0 19 2 20 6 25 0	20 5 21 9 19 2 21 6 25 0	Alternative A Timber Benchmark Alternative 1 Alternative 1 Maximum PNV Benchmark State of Oregon 6/ RPA 2/
WILDERNESS USE (MRVD) Supply Current Direction Maximum Potential Forest Plan Demand	25 7 25 7 25 7 16 3	25 7 25 7 25 7 17 8	25 7 25 7 25 7 19 2	25 7 25 7 25 7 21 0	25 7 25 7 25 7 25 7 22 9	Alternative A Oregon Wilderness Bill Alternative I Independant Estimate 3/
OLD GROWTH (M ACRES) Supply Current Direction Maximum Potential Forest Plan Demand	93 8 93 8 93 8 93 8 N/A	83 0 93 8 83 9 N/A	73 0 93 8 74 2 N/A	63 0 93 8 64 5 N/A	53 0 93 8 55 1 N/A	Alternative A Benchmark Alternative I
SNAGS (% OF POTENTIAL) Supply Current Direction Maximum Potential Forest Plan Demand	46 0 51 0 47 0 N/A	52 0 59 0 49 0 N/A	52 0 67 0 51 0 N/A	52 0 68 0 55 0 N/A	52 0 69 0 54 0 N/A	Alternative A Benchmark Alternative I
MINERALS - OIL (M ACRES LEASED) Supply Current Direction Maximum Potential Forest Plan Demand	808 808 808 140	808 808 808 670	808 808 808 400	808 808 808 270	808 808 808 140	Alternative A Alternative I

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Firewood estimate, based on past sales of permits
 Forest Service 1980 Resource Planning Act Program
 Estimate based on population growth See text.
 Management objective for deer established by Oregon Department of Fish and Wildlife
 The Forest Program for Oregon, 1980

NOTE Current Direction in this table is the No Action alternative which is Alternative A.

MM\$ - Million Dollars MAUM - Thousand Animal Unit Months MRVD - Thousand Recreation Visitor Days M Acres - Thousand Acres

Summary of Supply and Demand

Projected supply and demand for selected resources is discussed in Chapters 2 of the Forest and Grassland Plans. This information is repeated in this chapter of the FEIS to supplement the comparison of alternatives and is also discussed again in Chapter 3 in this FEIS

Identification of Alternative Themes and Objectives for the DEIS

Different "themes" and "objectives" were developed to help ensure a range of reasonable alternatives. Based on the minimum and maximum resource output levels (benchmarks) developed in the AMS, a number of output levels for each issue or concern were established. In some cases outputs represented production levels, such as volume of wood, and in other cases they represented conditions, such as acres of "old growth habitat." The alternative themes and objectives were created by grouping that, in the planning team's judgement, appeared to be compatible output levels for each issue or concern. Each output level for every issue or concern was incorporated into an alternative, in order to assure that the appropriate range of alternatives was considered.

In a second stage of alternative theme and objective evaluation every identified issue or concern was addressed to ensure that it was resolved in at least one alternative, and then tested to assure that the resulting alternative was significantly different from others. As a result of this step, some preliminary alternatives were consolidated and further refined, while others were eliminated. The Regional Forester and his Directors reviewed the Ochoco AMS and proposed alternatives in December 1984. The alternative themes and objectives were approved with a few relatively minor refinements. It was decided that three of the eight alternatives should be evaluated and fully developed with timber harvest schedules that depart from nondeclining yield. Thus, a set of eleven alternatives were analyzed in the development of the Forest Plan DEIS.

Determination of Management Areas

Different ways of managing the Forest and Grassland were developed as "management prescriptions" during the AMS stage described earlier. "Management areas" are delineated by applying a management prescription to a particular piece of land. To a large degree it is the mix of management areas in an alternative that determines the levels of outputs and conditions that result.

Each potential management area was analyzed to develop trade-off information. The FORPLAN model was used to assist in this process. The next section in this chapter describes the Ochoco FORPLAN model in general, and Appendix B describes the model and analysis process in detail. Relative impacts on present net value (PNV), big game numbers, and timber outputs were assembled for each potential management area. Using this data and other information presented on the relative benefits of managing one area versus another under a given management prescription, an expanded Forest Management Team assigned priorities to management areas for each alternative. Using these priorities, and the alternative themes and objectives, final management area maps were developed for each alternative in the FEIS.

Management Activity Scheduling, Cost Efficiency and Feasibility Testing

After management areas were defined for each alternative, the Forest scheduled management activities over time with cost efficiency, using FORPLAN. Each alternative was "run" with all specified resource objectives being treated as constraints. This then led to a cost efficient schedule of activities by maximizing present net value.

A series of "feasibility screens" were performed on the scheduling results for each alternative. Criteria considered included: 1) timber volume available in the Burns-Hines area over time, 2) timber species mix, 3) logging systems, 4) reforestation methods, and 5) ability to meet watershed protection requirements. Adjustments needed to produce realistic alternatives were made, and the alternatives were adopted for additional analysis and evaluation in the DEIS.

Refinement of Alternatives from the DEIS to the FEIS

The public responses to the DEIS and the supplement to the DEIS have been used to refine the ICO's along with management concerns. The result has been the development of separate plans for the Forest and Grassland. The specific refinements of the alternatives carried forward in this FEIS are discussed for each alternative in the section on alternatives in this chapter (pp. 2-21 through 2-54). As has been noted, the changes from the Draft to the Final have also been discussed in the Summary to this FEIS. Between the DEIS and the FEIS some data was changed, some processes were altered, and some additional analysis was performed Those changes are summarized as follows:

New Prescriptions and Yield Streams Applied in the FORPLAN Model

Uneven-aged timber management applied to ponderosa pine on general forest (20" target size).

Uneven-aged timber management applied to ponderosa pine in special areas with 30-inch DBH target size: Lookout Mountain, Stein's Pillar, Deep Creek, North Fork Crooked River.

Uneven-aged timber management (group selection) applied to mixed conifer in some areas.

Extended rotation ages and new thinning cycles for ponderosa pine in general forest.

More reliance on mixed conifer to produce cover.

Acres and Timber Yield Tables

Acres - Condition classes (i.e. the amount of pine sawlogs, saplings, etc.) have been updated from the 1983 information used in the DEIS. This was done to more accurately assess timber harvest scheduling and its associated outputs and effects.

Timber Yield Tables - Yield tables were updated to reflect the growth that has occurred in the last five years in order to more accurately determine outputs and effects.

Other

New elk coefficients.

New Habitat Effectiveness model for elk.

Standard view shed procedures eliminated in favor of set width (1200 ft.).

New riparian analysis and scheduling based on updated stream condition inventory.

Potential water developments for livestock and wildlife were re-evaluated. Existing old growth inventory was updated.

Anadromous fisheries were identified, the analysis included resource production relationships and economic parameters. Potential for mineral exploration and leasing, and the economic value of mineral leases incorporated.

Potential for capital investments concerning developed and dispersed recreation, including trails, was re-evaluated.

Some changes were made to the cost and values data between the DEIS and the FEIS. These changes are detailed in Appendix B, Section IV, Economic Efficiency Analysis. Generally the number of changes were limited in scope. They included addition of data for mineral leases and anadromous fisheries which were ignored in the Draft. A review of the individual resources and their potential to significantly affect present net value and the comparison of alternatives, and potentially the decision, became the primary decision criteria for making any changes.

FORPLAN and the Analysis Process

Description of FORPLAN

Alternative development and evaluation for an entire National Forest has proven to be a complex process during which an enormous amount of information must be considered. Because of this complexity, several interrelated computer models and analytical tools were utilized to help develop alternatives and to evaluate their associated outputs and effects. The central model for this analysis process is called FORPLAN (FORest PLANning Model). FORPLAN is a computerized linear programming model which allows a great deal of flexibility in formulating a mathematical representation of forest management interactions and activities. The major purpose of FORPLAN is to assist selection of the most efficient method of achieving goals and objectives, primarily timber management. Tens of thousands of management options, or combinations of options, can be considered simultaneously by FORPLAN. The FORPLAN model was designed and used to analyze the economic and output tradeoffs associated with the different emphases provided by the ICOs. A brief discussion of the Ochoco FORPLAN model is contained in the following paragraphs. A detailed description can be found in Appendix B.

The first key step in the development of the FORPLAN Model was to identify the "analysis areas" for the Forest and Grassland. Analysis areas are tracts of land with similar ecological characteristics that result in similar costs, outputs, and effects in terms of the model. These units have significant physical, biological, and economic differences in the way they respond to alternative management prescriptions. For example, an analysis area on the Forest may be two-storied ponderosa pine stands, on steep slopes, contained in roadless areas located on the Big Summit Ranger District.

In the FORPLAN model analysis areas were assigned to "management prescriptions" to achieve resource management objectives for particular benchmarks or alternatives. The prescriptions are associated with particular management areas and contain sets of standards and guidelines describing how forest resources in that area are to be managed. Development of prescriptions was a major step in the modeling. Forest interdisciplinary teams designed prescriptions to achieve a range of goals and objectives based on the ICO's. From six to ten different management prescriptions were prepared for each analysis area depending on its resource capabilities.

The management prescriptions and associated standards and guidelines were represented in FORPLAN as "coefficients." In other words, the costs, outputs, and effects of applying a prescription to an analysis area had numerical values in the model. Such things as the dollars required, forage produced, timber harvested, and effects on elk habitat made up the core of the model. Different timing patterns were also allowed. These specific options concerning how to manage a particular piece of land over time, then, served as the basis for choice in FORPLAN.

The prescriptions FORPLAN selected depended on the "objective function" and the set of "constraints" used to represent a particular benchmark or land management plan alternative. The objective function served as the overall driving force for the model and usually maximized present net value. Constraints designed to meet all of the multiple resource goals and objectives for a particular benchmark or alternative had to be met first. Once the model had determined that a feasible solution existed by satisfying all of the constraints, it would then search for the set of prescriptions which permitted it to optimize the results according to the specified objective function.

The Analysis Process

Guidance for analysis of alternatives is found in the NFMA regulations (36 CFR 219.12 (f)(8)) as stated below:

"Each alternative shall represent to the extent practicable the most cost efficient combination of management prescriptions examined that can meet the objectives established in the alternative."

This requirement was met through design of the FORPLAN model, use of the model to select and schedule prescriptions for each alternative, use of the model in sequential analyses to help design alternatives, and by conducting supplemental analyses. The following paragraphs summarize the types of analyses performed.

The Forest performed several types of analyses in the process of designing and building the FORPLAN model. The purpose of these analyses was to provide a wide range of choice in order to evaluate the significant aspects of cost-efficient prescription assignment. Major examples of this type of analysis follow:

- Development of Analysis Areas Testing different combinations of land classifications leading to use of the analysis area data that appeared to most efficiently reflect economic and environmental factors (Forest Planning Records, 19207/ 7/83).
- 2. Cost Efficiency Analysis Specific modeling prescriptions were developed, tested, and selected based to a large degree on cost efficiency analysis (Forest Planning Records, 1920 9/10/84).
- 3. Specific modeling procedures themselves were also analyzed for cost efficiency. For example, the Forest elected to manage and model old growth habitat with a dedicated stand system based in part on economic efficiency considerations (Forest Planning Records, 1920 6/21/84). Also, procedures for dispersion of harvest units were adopted to minimize the impacts on present net value (PNV) while meeting dispersion objectives (Forest Planning Records, 1920 6/13/85).

The resulting Ochoco FORPLAN model was used to determine cost efficient prescription assignment and scheduling for each alternative and benchmark.

A number of other different types of analyses were performed in conjunction with FORPLAN runs, both to evaluate different mixes of goals and objectives, and to evaluate choices not explicitly analyzed in FORPLAN. For example, an analysis in the latter category examined the relative cost efficiencies of different management prescriptions and the timing of initial entry, as applied to individual roadless areas. The FORPLAN model was not able to validly analyze these choices with a single model run, so sequential analyses were performed to provide the economic efficiency trade-off data.

Another similar type of analysis examined relative cost efficiencies of different management area locations on the Forest and Grassland as described in Appendix B. The AMS also documented a series of analyses performed to provide a framework for alternative development. In the AMS, different mixes of goals and objectives were examined to provide cost efficiency information relative to the maximum PNV obtainable, competition between market and assigned values, and current management direction. Opportunity costs of economic assumptions, management requirements, and timber harvest policies were also determined.

Between the DEIS and FEIS, Alternatives B-Modified, C-Modified and E-Departure were updated, and Alternative I was developed for the Forest and Grassland Plans. Alternative A in this FEIS is the "current direction" benchmark from the DEIS. See Appendix B for more detail.

The FORPLAN model, however, is not able to deal with all types of planning questions. Significant situations were analyzed "outside the model" through supplementary analyses. For example, early in the planning process an opportunity to increase domestic livestock forage availability by constructing additional water developments was recognized. An economic analysis of the proposed investments was conducted and the results used in the various benchmarks and alternatives. Another example is the elk habitat effectiveness index (HEI). The HEI is developed from a model outside FORPLAN, which uses cover quantity, cover quality and road density to evaluate the quality of elk habitat. Forage availability is not a factor in this model. An analysis of forage availability for livestock and wildlife on the Forest and Grassland showed that forage availability is not a limiting factor for elk habitat on the Forest (this analysis is available in the planning records located at the Ochoco National Forest headquarters in Prineville, OR.). Forage availability will, however, be looked at on a project basis during implementation of the plans and the resultant allotment management plan revisions.

Land Allocations

Management of certain areas of the Forest remain constant in all alternatives due to existing legislative or administrative requirements. The Forest does not have the authority to change the management of these areas. Such places include Wildernesses and Wild and Scenic Rivers. Areas of the Forest not held constant because of legislative or administrative requirements are assigned to management areas. There are 28 management areas on the National Forest and 16 on the National Grassland in Alternative I. These are not contiguous areas, but rather, each area represents a different management emphasis. For example, Management Area 20 emphasizes management of winter range for big game and is found in various places across the Forest, as may be other management areas. The maps accompanying this FEIS display management emphasis. The management areas are actually aggregates of those emphases.

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Land use allocations (management areas) are not displayed for Alternative NC. A discussion of land classification can be found in the 1979 Timber Resource Plan.

During the planning process, the Interdisciplinary Team developed management strategies, called management prescriptions, for each management area. Each management strategy emphasizes a particular resource or use, or it incorporates legislated allocations such as wilderness. All management strategies meet all management requirements (see discussion that follows). Each of the management strategies was represented in alternatives where the area allocated was capable of attaining the desired future condition.

Management Requirements

Many laws and regulations guide Forest Service activities One law in particular, the National Forest Management Act of 1976 (NFMA), and its implementing regulations, provides direction for the forest planning process. The regulations for National Forest System Land and Resource Management Planning, in Section 36 of the Code of Federal Regulations, Part 219 (36 CFR 219) specify: 1) the minimum specific management requirements to be met in accomplishing the goals and objectives of the National Forest System (36 CFR 219.27), and 2) the minimum requirements for integrating individual forest resource planning into the forest plan (36 CFR 219.14 through 219.26).

Some requirements are procedural and need not be addressed here. Some were analyzed and available for public review during the environmental analysis for the Regional Guide and are omitted as well. The management requirements treated in the supplement to the DEIS that required additional analysis were: size and dispersion of created openings, providing adequate habitat to maintain viable populations of existing native vertebrate species and water quality. A more thorough discussion of management requirements is presented in Appendix F.

The management requirements from the planning regulations (36 CFR 219.27) are legal requirements, and as such are ends that must be achieved on the ground when the forest plan is implemented For example, the NFMA implementing regulations require that fish and wildlife habitat be managed to maintain viable populations of existing native vertebrate species and desired nonnative vertebrate species in the planning area. Whatever implementation methods are chosen, this--and all other management requirements--must, by law, be met.

Specifications or standards for achievement for each management requirement are established at the national level or through analysis at the regional level for most of the management requirements. These are listed in the regulations or as standards and guidelines in the Regional Guide. Additional specifications identified on the Forest are listed as standards and guidelines in the Forest and Grassland Plans and in the FEIS Appendix D.

Often, the pool of scientific knowledge is insufficient to provide the entire basis for defining the specific conditions or standards that will satisfy or meet a management requirement. When this happens it is necessary to rely on field experience, to use professional judgement of knowledgeable professionals and to establish monitoring and research that will provide better information for future planning efforts. Implementation methods are the means or ways of meeting the ends (management requirements). Using the pileated woodpecker as an example, the end is to provide adequate habitat to maintain a viable population of pileated woodpeckers into the foreseeable future. The means of providing this habitat involves designing and implementing a set of practices that will assure that nesting and feeding areas meeting the needs of pileated woodpeckers are available in the future. These habitats are to be located closely enough together to allow woodpeckers occupying adjacent habitat areas the opportunity to interact, thus maintaining genetic diversity and viability of the species.

Unfortunately, the distinction between ends and means is not always clear. For example, the requirement regarding viable populations of vertebrate species, stated above, is well defined. In contrast, the size and dispersion of created openings management requirement (end) is rather general: NFMA specifies that maximum size limits for areas to be cut in one harvest operation be established for areas to be clearcut (SEC.6(G)(3)(F)(IV)), but does not specifically state the objective (end) to be accomplished by doing so. Nonetheless, the implementing regulations and the Regional Guide have specified maximum unit sizes and dispersion requirements.

Often there is more than one way of achieving a management requirement. Considering and analyzing different means (or ways) of meeting a specific management requirement are particularly important if there are potentially large opportunity costs involved. The Forest and Grassland, through analysis, identified three management requirements that had opportunity costs greater than or equal to two percent. The methods of implementing these three management requirements were also analyzed. Appendix F to this FEIS provides a detailed discussion of the management requirements used in the planning process, their opportunity costs and the alternative methods of implementing each of them, for the Forest and Grassland. In addition, the BMP's for water quality (one of the MR's) are discussed in Appendix G.

Role and Use of Benchmarks

Benchmarks are calculations of the maximum output, production, or economic opportunities for a forest. They are similar to alternatives; they are a combination of management strategies, land capability, and activity schedules, the same "what, where, and when" considerations of alternatives discussed previously. Unlike alternatives, they are usually not capable of actually being implemented because they lack a consideration of specific geographic locations, environmental effects, compliance with management regulations, and generally do not respond to issues, concerns, and opportunities. They do provide significant information about the maximum biological and economic production potential. By showing potential, the benchmarks help to define the decision space within which alternatives could be developed.

Some benchmarks are economically based, while others indicate the maximum physical productivity of land for various resources. In benchmark analyses, each option must include meeting minimum management requirements of 36 CFR 219.27, such as protecting the productivity of the land and meeting minimum air and water quality standards. There are several benchmarks that are required by the regulations (36 CFR 219.12(e)) and National direction. They include:

Minimum Level: The minimum level benchmark displays outputs which would occur if management activities were reduced to levels necessary to keep the land in National Forest ownership, while meeting essential minimum environmental constraints and providing for the protection of life, health, and safety of incidental users. The Forest would be managed at a custodial level. Natural ecological succession would occur. Except for minimum administrative requirements and minerals and occupancy permits, there would be no man-made structures.

Maximum Present Net Value Based on Established Market Price: This benchmark specifies management of the Ochoco National Forest which would maximize the present net value of those outputs that have an established market price, such as timber and developed recreation. This benchmark manages timber subject to non-declining flow. Minimum timber rotations are based on utilization standards (7-inch diameter at breast height).

Maximum Present Net Value including Assigned Values: This benchmark specifies management which would maximize the present net value of priced outputs. Priced outputs include those that have a market price such as timber, and those that are nonmarket but have an "assigned" value based on what people would be willing to pay in the marketplace, such as dispersed recreation. This benchmark manages timber subject to non-declining even-flow and minimum timber rotations based on 95 percent of culmination of mean annual increment. Recreation and wildlife outputs are significant on the Forest. The difference in PNV between this benchmark and the previous one is primarily due to the added value of recreation and wildlife, with range having a smaller effect. Table 2-5 shows that timber, recreation, and wildlife are the major contributors to PNV on the Forest.

Current Level: This benchmark estimates the outputs and costs on the Forest subject to established management direction in current Multiple Use Plans, Land Management Plans, and specific resource plans. This benchmark was constrained to reflect existing budget levels. Timber is managed for at least 130-year rotations, and harvest is constrained to meet non-declining even-flow. Recreation and wildlife output values are low because low budgets preclude maintaining outputs at standard levels.

Maximum Timber Benchmark: This benchmark estimates the maximum capability of the Forest to produce timber in the first decade. This benchmark manages timber to meet non-declining even-flow. Minimum timber rotations are based on 95 percent of culmination of mean annual increment.

Maximum Unroaded Recreation Benchmark: This benchmark estimates the maximum potential for unroaded recreation on the Forest. All inventoried RARE II areas are allocated to roadless management providing the largest possible unroaded acreage that is available on the Forest. Timber is managed on remaining lands for minimum timber rotations of 130 years to improve the quality of the recreation experience. Timber harvest is constrained to meet non-declining even-flow.

Other benchmark analyses were conducted to determine opportunity costs of management requirements, the affect of restricting timber harvest rotations to the culmination of mean annual increment (CMAI), and the effect of non-declining flow (NDF) of timber harvest. Table 2-4 displays the required benchmarks done prior to the DEIS along with the selected outputs for each. Table 2-5 shows information on maximum outputs from benchmark analysis by resource compared with outputs for the alternatives.

Range of Alternatives

Overview

A range of alternatives was formulated according the requirements of NEPA and NFMA. The alternatives were designed to address the issues from the public involvement process and validation phase between the DEIS and this FEIS. Decision space for alternatives was defined through the analysis of the management situation and the benchmark analysis and evaluation previously discussed. Additional discussion of the formulation of alternatives is provided in Appendix B to this FEIS.

Assumptions Common to All Alternatives

Some assumptions are common to all alternatives. Among them is requirement that the alternatives meet laws, regulations, and policies that are applicable to the management of the Forest and Grassland. Significant items are noted below.

The selection of harvest systems must conform with the criteria specified in the Regional Guide and the U.S. Department of Agriculture regulations. Additional discussion on the selection of harvest systems is presented in Appendix E to this FEIS.

The Region's recent direction on vegetation management, "Managing Competing and Unwanted Vegetation" FEIS, Nov. 1988, guides vegetation management activities for the Forest and Grassland and interprets application of the standards found in 36 CFR 219.27(b).

The management requirements, discussed earlier in this chapter, are incorporated into all alternatives except Alternative NC in the Supplement to the DEIS. Only the No Change alternative is carried forward without them. Forest-wide Standards and Guidelines are generally designed to meet resource protection or mitigation required by laws, regulations, or policies. They are common to all alternatives. Resources treated in this manner are: air quality, cultural resources, soil and water, threatened and endangered plant and animal habitat, Native American rights and claims, and human resource programs (see Chapter 4 of the Forest Plan and FEIS Appendix D).

Best Management Practices (BMP's) are specifically designed to protect water quality, as required by Section 208 of the Clean Water Act. General BMP's will be selected and tailored for site-specific conditions to arrive at project-level BMP's for the protection of water quality (see Appendix G).

Required Alternatives

Information generated by the benchmark analyses was used by the Interdisciplinary Team to construct alternatives. Among the alternatives formulated were several required by regulation, and National as well as Regional direction. These alternatives were reviewed against the public comments to the DEIS and carried forward intact or with modifications, or they were eliminated from further consideration as listed and briefly described below:

Current Direction (No Action, Alternative A): This is the "No Action" alternative required by the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14). This alternative continues management of the Ochoco National Forest and Crooked River National Grassland according to direction in existing management plans. It is a continuation of existing policies, standards, and guidelines with current budget updated for changing costs over time. It approximates production of current levels and mixes of resource outputs. Current management emphasis is on a mix of timber, big game, and roadless recreation. Alternative 'A' represents the "No-Action" alternative herein.

Emphasis on the Current RPA Program (Alternative B-Modified): This alternative determines how the Current (1980) RPA Program attributed to the Ochoco National Forest through the Regional Guide might best be implemented. In the DEIS, Alternative B emphasized RPA timber and range goals, and alternative B-DEPARTURE combined RPA timber, range, and wildlife goals. Alternative B is car-

	Minimum Level	Max PNV	Max Timber	Max Range	Max Big Game	Max Unroaded Recreation
PNV (MM \$)		512	480	424	429	454
Change in Jobs From Current Situation	-1,028	234	226	149	-93	-107
Payments to Counties (MM \$)	0	60	56	47	42	40
1st Decade Average Annual ASQ MMCF MMBF	0 0	22 9 139	23 4 142	22 1 132	17 1 102	15 5 93
Elk (No of Elk 5th Decade)	7,950	1,510	1,270	1,350	4,270	4,040
Deer (No of Deer 5th Decade)	22,600	20,470	13,350	17,060	22,600	22,600
Forage Production (MAUM's/Yr)	0	82 0	80 8	105 3	71 0	71 0
Old Growth (M Acres 5th Decade)	94	39	39	39	40	75
Snag Habitat for Cavity Nesters (%of potential, 5th Decade)	70	30	30	30	60	45
Riparian Areas in Excellent Condition (M Acres 5th Decade)	175	17 5	19	19	17 5	17 5
Roadless - Allocated (M Acres)	59 9	0	0	0	0	59 9

TABLE 2-4 OUTPUTS AND EFFECTS OF REQUIRED BENCHMARKS

ried forward in this FEIS with modifications to incorporate both forest industry and other public concerns and data updates. It will be called Alternative B-Modified.

Emphasis on Nonmarket Opportunities (Alternative C-Modified): This alternative puts emphasis on water, fish and wildlife, recreation, and other amenity values. Management for other resources will be at economically and environmentally feasible levels consistent with the emphasis on amenity values. In the DEIS, Alternative C emphasized amenity values. It is carried forward here with modifications to incorporate public comment and data updates and continues as Alternative C-Modified.

Emphasis on Nondevelopment and Intensified Management (DEIS Alternative F): This alternative retains all roadless areas in an unroaded condition while increasing commodity production on those areas already roaded. Its purpose is to strive for high commodity outputs and high roadless recreation management, and intensified management on areas already developed. This alternative was considered in the DEIS but is not carried forward in this FEIS.

Emphasis on Market Opportunities (DEIS Alternative H): This alternative emphasized outputs that have an established market price (timber, domestic livestock use, developed recreation opportunities, and minerals) in the DEIS. Management for other resources was at economically and environmentally feasible levels consistent with market-oriented outputs. In the DEIS, Alternative H emphasized market opportunities for the Forest and Grassland. This alternative was considered in the DEIS but is not be carried forward in this FEIS.

Emphasis on Economic Efficiency (DEIS Alternative H-Departure):

This alternative emphasized management of outputs with market or assigned values at their most economically efficient levels. In the DEIS, Alternative H-DEPARTURE met this emphasis. This alternative was considered in the DEIS but is not be carried forward in this FEIS.

Departure Alternatives

Three "Departure" Alternatives (B-DEPARTURE, E-DEPARTURE, and H-DEPARTURE) had the same emphasis and management areas as the alternatives they are based on (B, E, and H respectively) in the DEIS. Their timber harvest schedule was modified to "depart" from a nondeclining flow of timber. Management under the departure alternatives would result in higher volumes of timber harvested in the "near future," but have lower volumes of timber available for the "intermediate future." Alternative E-Departure, the Draft preferred alternative, is carried forward here as a reference point. The other departure alternatives are eliminated based on public comments.

No Change Alternative

The No Change Alternative, Alternative NC, was developed in response to decisions made regarding appeal number 1588, brought by the Northwest Forest Resources Council on May 19, 1986. The appeal questioned the decision by the Regional Forester to "require inclusion of minimum requirements (MR's) in the No Action Alternative for each forest plan." The substance of the appeal was that a "true no-action alternative representing current management plans" was not included in the Forest Plan DEIS's. The No Change alternative is designed to represent the existing 1979 Timber Resource Plan and unit plans, and consequently does not complywith all provisions of NFMA and regulations promulgated to implement NFMA.

	Maxı- mum Outputs	NC	B-MOD	E-DEP	l Pre- ferred	A	C-MOD
PNV (MM \$)	512	380	452	471	475	421	395
Change in Jobs from Current Situa- tion	234	Un- known	176	196	118	57	-101
Payments to Counties (MM \$)	60	50	49	50	49	43	35
1st Decade Average Annual ASQ MMCF MMBF	23 4 14 2	N/A N/A	21 8 130	20 6 123	19 0 115	193 115	15 6 94
Elk (No of Elk 5th Decade)	4040	Un- known	1700	2780	2620	2690	3700
Deer (No of Deer 5th Decade)	22,600	Un- known	17,210	22,600	22,600	22,600	22,600
Forage Production (1st Decade MAUM's/Yr)	105 3	77 5	75 0	79 0	75 0	77 5	73 1
Old Growth (M Acres 5th Decade)	94.0	40 0	42 4	55 0	55 1	53 0	78 2
Snag Habitat for Cavity Nesters (% of potential, 5th Decade)	70	52	33	55	54	52	69
Riparian Areas in Excellent Condition (M Acres 5th Decade)	54	54	17 5	94	17 5	54	17 5
Roadless - Allocated (M Acres) 1/	59 9	29 1	107	27 3	38 4	31 2	41 0
Scenic Corridors (M Acres) 2/	102 7	83 5	34 4	46 2	41 7	83 5	101 1

TABLE 2-5 MAXIMUM RESOURCE OUTPUTS COMPARISON WITH ALTERNATIVE OUTPUTS

1/ Total acreage for lands allocated to management areas with unroaded recreation emphasis (D9, F8, F10, F4, G8)

2/ Total acreage for lands allocated to managment areas with visual resource emphasis (D5, D6, D7, G13, F26, F26, F27)

New Alternatives/ Preferred Alternative

A thorough review of the public comment and continuing validation and dialogue with key publics has resulted in the Forest developing a new alternative. The new alternative separates plans for the Forest and the Grassland. It was developed through a complex process of combining publicly supported parts of the other alternatives with Alternative E-Departure. It incorporates new information since the DEIS, such as the passage of the Oregon Omnibus Wild & Scenic Rivers Act. This new alternative, Alternative I, is the preferred alternative.

Alternatives Considered but Eliminated From Detailed Study

Eleven alternatives were developed to address the twelve ICOs identified for the DEIS. Analysis and evaluation of public comment and an administrative appeal resulted in the development of new alternatives (NC in the Supplement to the DEIS, and I in this FEIS), the modification of Alternatives B and C, the replacement of Alternative A to reflect the current situation benchmark, and E-Departure being carried forward as a reference point from the DEIS to the FEIS.

Alternative A in the DEIS has been replaced by the current direction benchmark which incorporates the NFMA requirements and makes the no action alternative one which could be implemented. Alternative A in this FEIS is the no action alternative.

Alternative B was modified by Timber Industry and provided as Alternative B+ between the DEIS and the FEIS. The Forest, in conjunction with Timber Industry representatives, refined B+ and refer to it as B-Modified to represent the Timber Industry proposal for the FEIS. With the exception of E-Departure, the other departure alternatives were eliminated based on the overwhelming public support for staying within sustained yield bounds for the Forest. Alternative C was modified to incorporate data updates and some management emphasis updates. Alternatives D, E, F, G, and H were not carried forward in this FEIS. Their further analysis was not considered necessary at this point, though they have contributed to the consideration of a reasonable range of alternatives in the development of the Forest and Grassland Plans. Based on a thorough review of the public comments and management concerns, it was determined that these alternatives could be eliminated at this point. The modified alternatives carried forward and the new alternatives respond to planning issues considered in the DEIS and offer a reasonable and appropriate range of choice for the decision on the Forest and Grassland Plans.

Alternatives Considered and Analyzed in Detail

Description of the Alternatives

Introduction

The alternatives treated, present a reasonable range of implementable approaches to managing the Forest and Grassland. Each is a combination of management activities, practices and schedules which results in a unique combination of resource outputs, land uses, and environmental conditions. They were formulated through an analysis process that explored a wide array of possibilities as shown by the benchmarks and alternatives discussion on pages 2-13 through 2-17.

Resource emphases by alternative are summarized in Table 2-6. Some of the management area allocations can be lumped into resource emphasis categories which summarize land allocations with very similar resource management emphasis.

Allocating lands on the Forest and Grassland into different management areas is a part of the alternative formulation process. For example, a given management area consists of the lands which emphasize a particular resource or combination of resources such as "old growth." Acreages allocated to different management areas vary from one alternative to another. Table 2-7 presents the actual acreage allocations by management area by alternative. Management area maps displaying the allocations are included with the Forest and Grassland Plans.

Management areas are managed according to specified standards and guidelines that provide direction on the types, amounts, and timing of activities. Resource coordination and mitigation are also provided for by the standards and guidelines. Some standards and guidelines were developed by the interdisciplinary team specifically for environmental conditions on this Forest and Grassland. Others were adopted from the Regional Guide. They are found in Chapter 4 of the respective Plans. For other alternatives, they are given in Appendix D of this FEIS.

Alternatives have different land uses being emphasized, different resource outputs, and as a result, different environmental effects. Some of the differences among the alternatives are a reflection of the specific objectives which are incorporated by design. The land uses, environmental effects, and resource outputs by alternative are summarized in Table 2-8.

The interrelationships between resource outputs and environmental effects are discussed in Chapter 4 of this FEIS, Environmental Consequences. Table 2-8 is intended to facilitate comparison of the alternatives.

Mitigation Measures Common to All Alternatives

Mitigation measures are intended to minimize or eliminate potential conflicts or adverse effects of implementation. Mitigation measures have been developed through interdisciplinary efforts and are incorporated into the Plans at different levels in several different ways:

The standards and guidelines and management area prescriptions in Chapter 4 of the Plans are a fundamental and integral part of these measures, and as such they are a basic and essential part of the Plan.

Additional mitigation measures in the Forestwide standards and guidelines and mitigation measures specific to individual management areas are also contained in Appendix D for all alternatives other than I.

The management area allocations play an important role in mitigation by the separation of incompatible uses, impacts, and conflicts.

National Forest Management Act (NFMA) requirements were incorporated into the planning process and are reflected in the allocations and standards and guidelines (FEIS Appendices B and D, Plans Chapters 4).

"General Water Quality Best Management Practices" (USDA Forest Service, Pacific Northwest Region, November 1988. 86p) are incorporated by reference under requirements of Section 319 of the Clean Water Act and are discussed in Appendix H.

The monitoring plan, which includes provisions for monitoring the effectiveness of mitigation measures, is contained in the Proposed Forest

 TABLE 2-6

 RESOURCE EMPHASIS ACREAGES BY ALTERNATIVE

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	ALTERNATIVES							
Emphasis	B-Mod	E Dep	l Preferred	A	C-Mod			
Wilderness	37,325	39,825	37,325	37,325	47,325			
Research Natural Areas	2,145	4,800	4,510	2,230	4,860			
Old Growth	18,740	26,340	19,990	36,970	45,030			
Cultural	0	0	9,560	0	0			
Unroaded Recreation	17,130	27,315	37,060	31,200	40,960			
Eagle Roosting	570	570	570	570	570			
Developed Recreation	4,650	750	4,650	750	750			
Dispersed Recreation	2,060	0	2,060	0	0			
Riparian Excellent	18,930	8,260	20,240	3,850	15,550			
Riparian Acceptable	0	7,630	0	12,210	0			
Special Recreation	3,420	1,580	11,530	0	1,580			
Special Wildlife	430	0	2,990	0	0			
Big Game Winter Range	35,440	72,310	99,570	32,100	308,150			
Big Game Summer Range	0	154,100	0	61,830	378,775			
Timber/Wildlife	171,490	0	107,360	0	0			
Timber/Range	603,010	555,020	556,290	649,170	0			
Wild & Scenic Rivers	5400	4030	5400	4030	4030			
Visuals	34,410	46,160	41,670	83,450	101,110			
Facilities	1,000	460	1,000	460	460			

Emphasis	Applicable Management Areas
Wilderness	D8, F1, F2, F3, F4
RNA's 1/	D12, F5, G4
Old Growth	D4, F6, G5
Cultural	F7
Unroaded Recreation	D9, G8, F8, F10, F11
Eagle Roosting	F12
Developed Recreation	D11, F13, G11, G12
Dispersed Recreation	D9, D10, F14, G14
Riparian Excellent	D14, F15, G9
Riparian Acceptable	D13
Special Recreation	F11B, F16, F17, F19
Special Wildlife	G10, F18
Big Game Winter Range	D2, F20, G1, G2
Big Game Summer Range	D3
Timber/Wildlife	F21 (F20 for B-Mod)
Timber/Range	D1, F22, G3
Wild & Scenic Rivers 2/	F23, F24, G6, G7, G8 (that portion of Squaw Creek being recommended)
Visuals	D5, D6, D7, G13, F25, F26, F27
Facilities	F28, G15, G16

TABLE 2-6 CONTINUED, ACREAGE DOCUMENTATION

^{1/} RNA acreage totals are derived from the final management area mapping and R 2 data base acreage calculations RNA boundaries were slighty modified from the DEIS to the FEIS and consequently the total acreage for the final does not exactly track with that from the DEIS and the discussion of RNA s in Chapter 3 of the FEIS

^{2/} An eligibility and suitability evaluation has been made for Squaw Creek. A recommendation and interim management guidance for a Wild and Scenic River designation has been made in Alternative B-Modified and I For those alternatives, 1,370 of unroaded recreation emphasis has been deleted and added to the Wild and Scenic River emphasis
	ALTERNATIVES										
MANAGEMENT AREAS	B-MOD	E DEP	l Preferred	A	C-MOD						
MA-D1		555,020		649,170	0						
MA-D2		72,310		32,100	308,150						
MA-D3		154,100		61,830	378,775						
MA-D4		26,340		36,970	45,030						
MA-D5 4/		12,150		30,690	64,700						
MA-D6 5/		28,690		52,760	36,410						
MA-D7 8/	0	5,320	. 0	0	0						
MA-D8 9/		2,500			9,350						
MA-D9 6/		27,315		31,200	40,960						
MA-D10 7/	0	7,000	0	0	7,000						
MA-D11		750		750	750						
MA-D12		4,800		2,230	4,860						
MA-D13		7,630		12,210	0						
MA-D14		8,260		3,850	15,550						
MA-F1	13,400	13,400	13,400	13,400	13,400						
MA-F2	5,400	5,400	5,400	5,400	5,400						
MA-F3	17,400	17,400	17,400	17,400	17,400						
MA-F4	1,125	1,125	1,125	1,125	1,125						
MA-F5	2,035		4,400								
MA-F6	18,000		19,250								
MA-F7	0		9,560								
MA-F8	0		11,820								
MA-F9	0		2,480								
MA-F10	3,110		3,110								
MA-F11	7,550 2/		15,660								
MA-F12	570	570	570	570	570						

 TABLE 2-7

 ACREAGES IN MANAGEMENT AREAS BY ALTERNATIVE

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FEIS Chapter 2

MANAGEMENT AREAS	B-MOD	E DEP	l Preferred	A	C-MOD
MA-F13	1,810		1,810		
MA-F14	1,970		1,970		
MA-F15	16,820 3/		18,130		
MA-F16	1,580	1,580	1,580	0	1,580
MA-F17	1,070		1,070		
MA-F18	0		2,560		
MA-F19	770		770		
MA-F20	0		64,130		
MA-F21	171,490		107,360		
MA-F22	543,570		496,850		
MA-F23	1,830	1,830	1,830	1,830	1,830
MA-F24	830	830	830	830	830
MA-F25	6,850		6,850		
MA-F26	26,000 1/		33,260		
MA-F27	1,000		1,000		
MA-F28	460	460	460	460	460
MA-G1	22,700		22,700		
MA-G2	12,740		12,740		
MA-G3	59,440		59,440		
MA-G4	110		110		
MA-G5	740		740		
MA-G6	720	720	720	720	720
MA-G7	650	650	650	650	650
MA-G8 10/	7,840		7,840		
MA-G9	2,110		2,110		
MA-G10	430		430		
MA-G11	150		150		
MA-G12	2,690		2,690		

MANAGEMENT AREAS	B-MOD	E DEP	l Preferred	A	C-MOD
MA-G13	560	「	560		
MA-G14	90		90		
MA-G15	80		80		
MA-G16	460		460		
Forest & Grassland TOTAL	956,150	956,150	956,150	956,150	956,150

* As opposed to the DEIS, the above acres include roads and administrative sites

1/ Entire acreage goes to Partial Retention

2/ Prescription Area A (top) only, remainder to go to General Forest

3/ Does not include connective habitat as in Alternative 1

4/ Reduced from that shown in Draft to reflect NFCR Scenic Corridor designation and Deschutes River Scenic Corridor

5/ Reduced from that shown in Draft to reflect NFCR Recreation Corridor designation and Crooked River Recreation Corridor

6/ Reduced from that shown in Draft to reflect NFCR Wilderness Study Area

7/ There are no acres allocated to Semiprimitive Motorized for Alternatives B-MOD, I or A

8/ There are no acres allocated to Partial Retention Middleground for Alternatives B-MOD, I, A, or C

9/ Deschutes Canyon/Steelhead Falls - portions allocated to wilderness for E-DEP All 10,000 acres allocated to wilderness - Alternative C None to other alternatives

10/ A portion of the Squaw Creek Management Area is being recommended for inclusion in the Wild and Scenic River System, a total of 1,370 acres for Alternatives B-Modified and I.

TABLE 2-8 QUANTITATIVE RESOURCE OUTPUTS, ENVIRONMENTAL EFFECTS, ACTIVITIES, AND COSTS BY ALTERNATIVE (AVERAGE PER YEAR UNLESS NOTED)

			ļ	LTERM	IATIVE	S	
Resource/Activity/Effect	Unit of Measure	NC	B-MOD	E DEP	I Preferred	A	C-MOD
		AIR Q	UALITY				
Total Suspended Particulates by Pre- scribed Fire	M Tons/Yr						
Decade 1		12 6	12 9	12 9	123	126	133
2 5		12 8 12 4	11 6 13 0	12 4 11 0	12.6 12.8	12 8 12 4	13 1 14 6
		BIOLOGICA	L DIVERSITY				
Riparian Areas in Excellent Condition	M Acres			I			
Decade 1			10 0		10 0		10 0
2		54	112	94	112	54	112
	1	54	173		175		
Riparian Areas Designated for Connec- tive Habitat	M Acres						
Decade 1		o	o	0	10	0	0
2		0	0	0	10	0	0
5		0	U	U	10	, v	
Snag Habitat for Cavity Nesters (Aver-	Percent of Potential						
Decade 1		Unknown	43	46	47	45	51
2		Unknown	41	50	49	52	59
5		Unknown	33	55	54	52	69
Existing Old Growth	M Acres	1					
Decade 1		93 8	938	93 8	93.8	93.8	93.8
2		40.0	806 424	82 5 55 0	83 9 55 1	53.0	78.2
Acres of Forested Land by Successional Stage 2/							
Stage I and II	M Acres						
Decade 1		Unknown	9	9	9	9	9
2		Unknown	45	40	30	43	21
Stage III	M Acres						
Decade 1		Unknown	146	172	151	170	138
2		Unknown	69	88	63	106	42
Stage IV	M Acres						
Decade 1		Unknown	205	159	184	159	191
5		Unknown	192	205	192	178	166
Stage V	M Acres						
Decade 1		Unknown	118	138	134	139	140
2 5		Unknown	224	183	230	191	265
Stage VI	M Acres						
Decade 1		Unknown	94	94	94	94	94
2 5		Unknown	42	62 55	55	53	78
							······
Acres of Nontorest Land by Plant Com- munity Type							
Timberline Meadows	M Acres	3450	3450	3450	3450	3450	3450
Meadows	M Acres	16,850	16,850	16,850	16,850	16,850	16,850
Juniper Dominant Grass Dominant	M Acres	137,650	137,650	137,650 50,900	50,900	50,900	50,900
Sagebrush Dominant	M Acres	80,100	80,100	80,100	80,100	80,100	80,100
Biscuit Root Scabland	M Acres	12,550	12,550	12,550	12,550	12,550	12,550

1/ Management indicator species (MIS) for snag dependent wildlife on the Forest and Grassland are the primary cavity excavators such as the Pileated woodpecker (also see Ch 3 pp 13-16)

2/ Acres are from the 1980 Timber Resource Plan and are adjusted for the Oregon Wilderness Act as per Timber Management Plan Ammendment No 1

TABLE 2-8 (Continued)

		ALTERNATIVES							
Resource/Activity/Effect	Units of Measure	NC	B MOD	e dep	I-Preferred	A	C-MOD		
		CULTURAL	RESOURCES						
Sites Documented Decade 1 2 5	Number/Yr	Unknowa Unknowa Unknowa	140 120 70	130 110 60	120 100 60	120 100 60	120 100 60		
Sites Enhanced/Interpreted Decade 1 2 5	Number/Yr	Unknown Unknown Unknown	3 3 2	3 3 2	3 3 2	3 3 2	3 3 2		
Nat'l Register Nomination Decade 1 2 5	Number/Decade	Unknown Unknown Unknown	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2		
		FI	RE						
Wildfire Effectiveness Index Decade 1 2 5	\$/1000 Ac Protected	725 726 729	720 720 720	725 725 733	715 715 715	725 726 729	732 732 732		
Precribed Burning Natural Fuels Decade 1 2 5	M Acres/Yr	12 3 12 3 12 3	98 98 98	117 117 117	10 4 10 4 10 4	12 3 12 3 12 3	13 2 13 2 13 2		
Activity Fuels Decade 1 2 5	M Acres/Yr	12 9 13 3 12 6	159 133 161	14.1 13 2 10 4	142 148 152	12 9 13 3 12 6	13 5 †3 1 16 1		
		FI	SH						
Anadromous Fish Steelhead Decade 1 2 5	SHCI 4/ (M Smott)	121 136 220	121 136 220	121 136 220	121 138 220	121 136 220	121 136 220		
Resident Fish (Rainbow and Brook Trout) Decade 1 2 5	M Numbers	656 1 749 25 1215 0	816 8 1150 5 2820 0	712 8 891 0 1782.0	818 8 1150 5 2820 0	656 1 749 25 1215 0	816 6 1150 5 2820 0		
		FOF	RAGE						
Potential Forage Production 3/ Decade 1 2 5	M AUM s/Yr	77 5 Unknown Unknown	75 0 82 0 85 0	79 0 78 9 79 4	75 0 81 5 84 6	79 1 78 9 86 5	73 1 73 3 74 4		
Structural Improvements Decade 1 2 5	Number	27 D 0	138 0 0	138 D O	138 0 0	27 0 0	0 0 0		
Nonstructural improvements Decade 1 2 5	Acres	N/A N/A N/A	13097 4337 4337	12477 3717 3717	12832 4072 4072	12530 3770 3770	8760 0 0		
Wild Horses Decade 1 2 5	Number	60 60 60	60 60 60	60 60 60	60 60 60	60 80 60	60 60 60		

3/ Forage production as displayed is the "potential," based on estimates by allotment, that could be achieved with the proposed schedule of range and riparian improvements by alternative. These potentials may not be achieved and are at the minimum, directly dependent upon the implementation of the proposed improvements in the first decade it is reasonable to expect that some or all allotments may expenses up to a 10% reduction in AUM's during the first decade to allow the accomplishment of riparian management objectives

4/ Steelhead Habitat Capability Index, thousands of smolt.

			A	LTERN	NATIVE	S	
Resource/Activity/Effect	Units of Measure	NC	8-MOD	e dep	l Preferred	A	C-MOD
		FOREST	RESIDUES				
Existing Residues	Million Tons	195	20 4	18 9	20 0	196	198
Minimum Site Requirements	Million Tons	10 4	10 4	10 4	10 4	10 4	10 4
Residues Removed Activity Decade 1 2 5 Natural Decade 1 2 5	Million Tons	37 37 27 12 11 07	47 37 35 10 09 06	4.2 37 23 12 11 07	43 41 33 10 09 06	39 37 28 12 11 07	41 37 35 13 12 08
Total Residues Remaining Decade 1 2 5		14 5 13 6 13 0	14 8 14 0 13 1	14.5 13 7 13 3	14 7 13 8 13 1	14 5 13 6 13 0	14 2 13 4 12 7
		FUEL	NOOD				
Fuelwood Decade 1 2 5	M Cords/Yr	140 124 116	15 0 14 0 13 0	13 1 12 3 10 0	13 0 <i>†2 0</i> 11 0	14 0 12 4 11 6	120 100 90
	<u> </u>	LAN	IDS				
Special Use Permits	Number	105	105	105	105	105	105
		MINERALS A	ND ENERGY				
Olt and Gas Decade 1 2 5	M Acres Leased	147 687 157	140 670 140	140 670 140	140 670 140	140 670 140	140 167 140
Geothermal Decade 1 2 5	Acres Leased	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Minerals Access Restrictions Withdrawn High Moderate Low	Percent	4 11 11 74	4 6 27 63	4 8 14 74	4 9 28 59	4 11 11 74	4 16 39 40
		OLD GRO	OWTH 5/				
Old Growth In wilderness and wilderness study (F1, F2, F3, F4, D8, D12) Ponderosa Pine Mixed conifer Total	M Acres		23 182 205	23 182 205	2 3 18 2 20 5	2 3 18 2 20 5	23 182 205
Allocated to Old Growth management area (F6, D4, G5) Existing Old Growth Ponderosa Pine Mixed conifer Juniper Capable Old Growth 7/ Total	M Acres	07	70 108 07 187	N/A 6/ N/A 0 7 N/A 26 3	69 111 07 13 200	N/A 6/ N/A 0 7 N/A 37 0 8/	14 0 25 0 0 7 5 3 45 0

TABLE 2-8 (Continued)

5/ Management Indicator Species (MIS) for Old Growth on the Forest is the Pileated woodpecker The common flicker is the MIS for old growth juniper on the Grassland

6/ NA - Data not available

7/ That which does not currently meet the characteristics described for "suitable", but exists on a site "capable" of producing it some time in the future

8/ This was based on managing these stands with timber harvest with long rotations

TABLE 2-8 (Continued)

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					A	LTI	ERN	ΙΑΤ	IVE	s	_		
Resource/Activity/Effect	Units of Measure	N	с	B-M	OD	EC	ЭЕР	I Prei	erred	, ,		C-N	aoi
Old Growth In roadless management ar- eas with no programed harvest (F5, F8, F10, F11, D4, G5) Ponderosa Pine Mixed Conifer Juniper Total	M Acres				11 20 05 36	1	N/A N/A 0 5 N/A	1	41 25 05 71		V/A V/A 0 5 V/A		54 29 05 88
Existing Old Growth areas in areas pro- grammed for harvest (F7, F9, F11B, F12, F13, F14, F18, F15, F17, F18, F19, F20, F21, F22, F23, F24, F25, F26, F27, F28) Ponderosa Pine Mixed conifer Total	M Acres			1 3 5	28 96 24		N/A N/A N/A	2 2	9 8 18 8 18 6		V/A V/A V/A	1	15 45 60
Total Existing Old Growth Pondersoa Pine Decade 1 2 5 Mixed Conifer Decade 1 2 5 Total Existing Old Growth Forest Decade 5	M Acres M Acres	2 1 7 6 3	32 80 50 20 50	2 1 7 6 3	32 62 92 08 44 32	2 1 1 7 6	23 2 8 5 3 0 70.8 14 0 12.0	2 1 1 2 6	32 82 30 57 21	2221	32 00 2.0 0.8 30 10	2 1 1 2 5 5	23 2 19 2 19 0 70 8 36 6 39 2
Total Existing and Capable Old Growth Decade 1	MAcres	9	38	9	38		13 B	9	95 1	9	38	5	991
			RECRE	ATION	1								
Developed Recreation Supply/Demand Decade 1 2 5	M FIVD's	S 141 0 141 0 141 0	D 129 8 145 9 191 9	S 159 4 159 4 159 4	D 129 8 145 9 191 9	S 149 0 149 0 149 0	D 129 8 145 9 191 9	S 159 4 159 4 159 4	D 129 8 145 9 191 9	S 141 0 141 0 141 0	D 129 8 145 9 191 9	S 159 4 159 4 159 4	D 129 8 145 9 191 9
Dispersed Recreation Roaded Natural Roaded Modified Supply/Demand Decade 1 2 5	M RVD s	1477 3 1477 3 1477 3	373 8 411 4 520 2	1230 3 1230 3 1230.3	373 8 411 8 520.2	1220 3 1220 3 1220 3	373 8 411 4 520 2	1204 1 1204 1 1204 1	373 8 411 4 520.2	1232 6 1232 6 1232 6	373 8 411 4 520 2	1125 3 1125 3 1125 3	373 0 411 4 520.2
Semiprimitive, Nonmotorized Supply/Demand Decade 1 2 5	M RVD s	11 1 11 1 11 1	34 2 37 4 48 1	114 114 114	34 2 37 4 48 1	35 2 35 2 35 2	34 2 37 4 48 1	47 2 47 2 47 2	34 2 37 4 48 1	11 1 11 1 11 1	34 2 37 4 48 1	55 4 55 4 55 4	34 2 37 4 48 1
SemIprimitive, Motorized Supply/Demand Decade 1 2 5	M RVD s	0 0 0	18 0 19 4 25 1	0 0 0	18 0 19 4 25 1	70 70 70	18 0 19 4 25 1	0 0 0	18 0 19 4 25 1	0 0 0	18 0 19 4 25 1	70 70 70	18 0 19 4 25 1

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		ALTERNATIVES								
Resource/Activity/Effect	Units of Measure	NC	B-MOD	e dep	1-Preferred	A	C MOD			
Hunting Use Decade 1 2 5	WFUD's	Unknown Unknown Unknown	173,200 168,000 143,200	172,500 169,500 164,600	169,100 166,600 161,400	176,400 172,400 163,000	170,600 170,600 189,900			
Resident Fishing Use Decade 1 2 5	WFUD's	76,400 84,900 99,500	94,300 109,100 123,800	82,900 93,600 108,300	94,300 109,100 123,800	76,400 84,900 99,500	94,300 109,100 123,800			
Anadromous Fishing Use Decade 1 2 5	WFUD s	5644 10,968 27,158	5644 10,968 27,158	5644 10,968 27,158	5644 10,968 27,158	5644 10,968 27,158	5644 10,968 27,158			
Trails Summer Non-Motorized Construction Decade 1 2 5 Reconstruction Decade 1	Miles	0 0 0 9	109 6 182 4 0 20 5	132 0 0 29 3	186 9 184 9 0 13 0	0 0 0 9	186 9 184 9 0 13 0			
2 5 Total Available Decade 1 2 5		9 9 96 96	20 5 38 8 206 4 388 8 388 8	15 0 15 0 228 228 228	25 0 25 0 283 7 468 6 468 6	9 9 96 96	25 0 25 0 283 7 468 6 468 6			
Trails Summer ATV Construction Decade 1 2 5 Reconstruction	Miles	0 0 0	95 95 0	0 0 0	95 95 0	0 0 0	95 95 0			
Decade 1 2 5 Total Available Decade 1		0 0 0	0 15 15 90	0 0 0	0 15 15 90	0 0 0	0 15 15 90			
2 5		0	190 190	0 0	190 190	0 0	190 190			
Trails Winter X-Country Construction Decade 1 2 5 Becaretustice	Miles	0 0 0	100 40 0	0 0 0	100 40 0	0 0 0	100 40 0			
Decade 1 2 5 Total Available		000000000000000000000000000000000000000	5 20 20	0 0 0	5 20 20	0 0	5 20 20			
2 5		0	149 149	0	149 149	0	109 149 149			
Trails Winter Snowmobile Construction Decade 1 2 5 Basestructor	Miles	0 0 0	210 40 0	0 0 0	210 40 0	0 0	210 40 ੍0			
Decade 1 2 5 Total Available		0	10 40 40	0 0	10 40 40	0 0 0	10 40 40			
2 5		0	285 325 325	0	285 325 325	0	285 325 325			
Wild and Scenic Rivers Wild Scenic Recreation Further Study	Acres	0 1480 2550	0 2845 2550	0 1480 2550	0 2845 2550	0 1480 2550	0 1480 2550			

TABLE 2-8 (Continued)

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		ALTERNATIVES							
Resource/Activity/Effect	Units of Measure	NC	B-MOD	E DEP	I-Preferred	A	C-MOD		
	RE	SEARCH NAT	TURAL AREAS	6 9/					
Ochoco Divide The Island <i>Haystack Butte</i> Dry Mountain Stinger Creek Silver Creek	Acres Acres Acres Acres Acres Acres Acres	2035 39 <i>0</i> 0 0 0	2035 0 0 0 0 0 0	2035 39 58 1187 453 844	2035 39 58 1187 453 844	2035 39 <i>0</i> 0 0 0 0	2035 39 58 1187 453 844		
		SC							
Preservation Retention Partial Retention Modification and Maximum Modification	M Acres M Acres M Acres M Acres	38 3 102 2 71 4 743 2	39 5 60 7 28 1 827 8	43 3 70 7 59 4 781 6	42 0 96 8 32 4 784.9	38 3 102 2 71 4 743 2	50 9 155 6 61 5 687 1		
SOCIAL AND ECONOMIC									
Social Change in Jobs 10/ Change in Income	Number Million \$	Unknown Unknown	176 29	196 3 0	118 1 6	57 0 9	-101 -2 2		
Economic Total National Forest Planned Budget Decade 1 2 5 Returns to Government Decade 1 2 5 Poet Malladae (2010)	Million Dollars Million \$	12 0 Unknown Unknown 19 5 Unknown Unknown	12 1 10 7 11 1 19 7 23 1 22 6	10 5 9 2 8 7 20 2 22 7 18 4	10 2 9 3 9 7 19 4 22 3 21 5	109 103 100 172 21 1 203	95 88 90 140 165 188		
Present Net Value (PNV)	Million \$	Unknown	452	 51	4/5	421	395		
		S(DIL	<u>_</u>					
Soil Loss (Erosíon) By Major Activity Timber Harvest & Roads Decade 1 2 5	M Tons/Yr	19 15 13	17 22 21	18 13 12	17 21 19	15 18 15	17 19 19		

9/ RNA = that would be recommended for inclusion in the National Forest System (FSM 4063)

10/ Change In jobs relative to the "current situation" discussed

TABLE 2-8 (Continued)

		ALTERNATIVES							
Resource/Activity/Effect	Units of Measure	NC	B MOD	E DEP	1 Preferred	A	C MOD		
		TIN	IBER						
Lands Tentatively Suitable for Timber Production	Thousand Acres	552 3 11/	533 2	533 2	533 2	533 2	533 2		
Lands Suitable for Timber Production	Thousand Acres	534 0 11/	511 3	495 0	493 7	488 6	471 4		
Lands with Timber Yield Reductions Full Yield 50-99% 1-49%	Thousand Acres	413 8 12/ 88 8 11/ 32 4 11/	484 5 26 8 0	0 495 0 0	0 491 9 1 8	0 488 6 0	0 471 4 0		
Long-Term Sustained Yield Capacity	Million CF	31 1 11/	21 8	193	190	19 5	156		
Allowable Sale Quantity Decade 1 Total Pine Decade 1	Million BF Million BF	N/A	130 85	123 87	115 82	115 79	94 65		
Allowable Sale Quantity Decade 1 2 5	Million CF	N/A N/A N/A	21 8 21 8 21 8	20 6 19 7 16 1	19 0 19 0 19 0	19 3 19 3 19 3	15 6 15 6 15 6		
Potential Yield 13/	Million BF	136 5	N/A	N/A	N/A	N/A	N/A		
Timber Sale Program Quantity Decade 1	Million BF	N/A	141 0	135 0	125 0	126 0	103 0		
Timber Sale Program Quantity Decade 1 2 5	Million CF	N/A	23 8 23 3 23 1	22 9 21 4 17 1	20 9 20 5 20 1	21 4 21 4 20 4	17 1 16 6 16 5		
Available Timber Harvest Prescriptions in First Decade Even aged Clearout Shelterwood Overstory Removal Uneven-aged Selection	Thousand Acres 14/	0 118 6 63 5 Unknown	25 3 49 8 21 2 67 5	144 254 1132 40	87 211 531 622	18 7 18 2 105 6 0 9	150 36 316 964		
Reforestation Decade 1 2 5	Thousand Acres	118 6 71 7 30 6	75 1 30 1 52 0	40 0 42 0 48 0	29 8 24 8 29 9	37 0 60 0 52 0	18 6 18 4 26 8		
Timber Stand Improvement Decade 1 2	Thousand Acres	48 0 66 0	53 2 46 2	19 0 13 0	53 0 54 0	40 0 12 0	68 3 61 5		

11/ For the NC alternative, these lands are the regulated commercial forest lands. These lands were not classified using the suitability critena, but were arrived at using the 1972 land classification system provided for by Amendment #1 of the 1985 Timber Plan. These lands are the standard, special and marginal components of commercial forest lands.

12/ For the NC alternative, these lands are the standard component of the regulated commercial forest base

13/ Potential yield applies only to the "No Change" alternative and comes from the Timber Resource Plan. The potential yield for the next ten years is the maximum harvest that could be planned to achieve the optimum perpetual sustained yield harvesting level attainable with intensive forestry on regulated areas considering the productivity of the land, conventional logging technology, standard cultural treatments, and interrelationships with other resource uses and the environment.

14/ See Appendix E, Selection of Harvest Cutting Methods

TABLE 2-8 (Continued)

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			A	LTERN	ATIVE	S	
Resource/Activity/Effect	Units of Measure	NC	B MOD	E DEP	1-Preferred	A	C-MOD
		RANSPORTA	TION SYSTE	M			
Arterial and Collector Road Construction Decade 1 2 5	Miles/Decade	8 12 0	14 12 0	4 0 0	8 6 0	8 12 0	4 0 0
Arterial and Collector Road Reconstruc- tion Decade 1 2 5	Miles/Decade	174 168 148	174 168 148	168 163 148	174 168 148	174 168 148	168 163 148
Forest Service Roads, Open and Main- tained Decade 1 2 5	Total Miles	4774 4992 5326	4800 5072 5484	4776 4962 5253	4734 4935 5304	4774 4992 5326	4743 4982 5187
Passenger Car Use, Open and Main- tained Decade 1 2 5	Total Miles	844 856 856	850 862 869	840 840 840	844 850 850	844 856 856	840 840 840
High Clearance Use, Open and Main- tained Decade 1 2 5	Total Miles	3236 3210 2736	3037 2993 2492	3046 2936 2331	2332 2210 2269	3236 3210 2738	2384 2099 1123
Roads Closed, Seasonally or Yearlong Decade 1 2 5	Total Miles	694 926 1734	913 1217 2123	890 1186 2082	1558 1875 2185	694 926 1734	1520 2043 3224
			ED AREAS				
(Roadless Criteria Acres) Acres Remaining Unroaded Lookout Mountain Decade 1 2	M Acres	16 6 16 6	78 78	29 29	15 7 7 6	16 B 16 B	16 6 16 6
5 Rock Creek/Cottonwood Creek Decade 1 2 5 Deschutes Canyon/Steelhead Falls		166 0 0 0	76 0 0 0	29 197 197 197	76 118 118 118	166 0 0 0	16 6 19 7 19 7 19 7
Decade 1 2 5 Silver Creek Decade 1 2		100 100 100 25 25	51 51 51 31 31	25 25 25 32 32	51 51 51 31 31	100 100 100 25 25	100 100 100 32 32
5 Green Mountain (SPM) Decade 1 2 5		25 0 0	31 0 0	32 70 70 70	31 0 0 0	25 0 0	32 70 70 70

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		ALTERNATIVES											
Resource/Activity/Effect	Units of Measure	Measure NC		8-N	100	E DEP		I-Preferred		A		C-MOD	
			WA	TER		-	-						
Water Quality Watershed Condition Decade 1 2 5	% above Threshold		21 0 0		0 0 0		0 0 0		0 0 0		0 0 0		0 0 0
Total in Enhanced Condition	Acres/Yr M Acres	360 360 32			890 87 32 100	740 120 32		890 87 32 10 0 11 2		360 360 32		890 87 32 10 0 11 2	
Water Yield Decade 1 2 5	M Acre Feet/Yr	591 585 575 574 559 582			584 572 566	575 563 587		588 580 574		572 560 562			
Relative Risk of Affecting Watersheds Decade 1 2 5	Ranking 1 - 6, 1 high est, 6 lowest	1 3 2			2 3 2	2 3 4		3 4 4		2 3 3		3 4 4	
	······		WILDE	RNESS	3								
Existing Wildemess Bridge Creek Black Canyon Mill Creek Recommended Wildemess Deschutes Canyon/Steelhead Falls Total Wildemess Capacity	Acres Acres	5400 13,400 17,400 0 38,200		5400 5400 13,400 13,400 17,400 17,400 0 2500 36,200 38,700		5400 13,400 17,400 0 36,200		5400 13,400 17,400 0 36,200		5400 13,400 17,400 10000 46,200			
Wilderness Supply	MVRDs	257 257			26 6	6 25 7		25 7		28.3			
Wilderness Demand Supply/Demand Semiprimitive Decade 1 2 5	M RVD's	S 25 7 25 7 25 7	D 165 192 275	S 25 7 25 7 25 7	D 165 192 275	S 26 6 26 6 26 6	D 165 192 275	S 25 7 25 7 25 7	D 165 192 275	S 257 257 257	D 165 192 275	S 28 3 28 3 28 3	D 165 192 275
Wilderness 15/ Primitive Trailed Decade 1 2 5 Primitive Nontrailed Decade 1 2 5 Semiprimutive Decade 1 2 5	Acres	36,4 36,4 36,1	0 0 0 0 0 0 200 200 200	33 33 30 30 30 30 30 29,5 29,5 29,5	300 300 300 000 000 000 300	38, 38, 38.	0 0 0 0 0 700 700 700	3: 3: 3: 3: 3: 3: 3: 3: 29,9 29,9	300 300 300 000 000 000 000 900 900 900	36, 36, 36,	0 0 0 0 0 0 0 0 0 0 0 0	3 3 3 3 3 9 3 9 3 9 3 9 3 9	3300 3300 3300 3000 0000 0000 900 900 90

TABLE 2-8 (Continued)

15/ Black Canyon's WROS classification is presently incomplete and is presently displayed in total as semiprimitive

		ALTERNATIVES					
Resource/Activity/Effect	Units of Measure	NC	BMOD	E DEP	I-Preferred	A	C-MOD
WILDLIFE							
Deer Population Decade 1 2 5	Number	Unknown Unknown Unknown	22,600 22,600 17,206	22,600 22,600 22,600	22,600 22,600 22,600	22,600 22,600 22,600	22,600 22,600 22,600
Elk Population Decade 1 2 5	Number	Unknown Unknown Unknown	3210 2950 1700	3170 3030 2780	3000 2870 2620	3370 3160 2690	3740 3660 3700
Wildlife Habitat Improvement Decade 1 2 5	Acres/Yr	Unknown Unknown Unknown	768 400 100	302 100 100	768 400 100	132 100 100	468 200 150
Snag Habitat for Cavity Nesters (Aver- age across Forest) Decade 1 2 5	% of Potential	Unknown Unknown Unknown	43 41 33	46 50 55	47 49 54	46 52 52	51 59 69
Habitat for Old Growth Dependent Species Allocated Old Growth Supplemental Feeding Areas Unallocated Old Growth 16/ Decade 1 2 5 Total Habitat 17/ Decade 1 2 5	Acres	32,860 26,500 26,500 26,500 59,360 59,360 59,360	18,740 18,000 24,100 24,100 24,100 60,840 60,840 60,840	26,340 28,340 N/A N/A N/A N/A N/A N/A	19,990 19,250 37,600 37,600 37,600 76,840 76,840 76,840	36,970 36,970 N/A N/A N/A N/A N/A N/A	45,030 45030 39,300 39,300 39,300 129,360 129,360 129,360
Eagle Roosting Areas (Baid and Golden)	Acres	570	570	570	570	570	570

16/ Old Growth In management areas with no programmed timber harvest.

17/ Total Old Growth in management areas which is allocated, Old Growth in management areas not allocated but with no programmed timber harvest, and supplemental feeding areas

** The outputs, effects, activities, and costs included in this table are estimates and projections based on available inventory data, use of various modeling techniques and analyses, professional judgement and are subject to the annual budgetary process

and Grassland Plans (see Chapters 5).

Mitigation measures are developed at the site specific project level of planning, and projects are "tiered" to other planning level measures above.

Management requirements established in accordance with Regional direction (1920, 2/9/83) are a major part of mitigation found in all alternatives

Requirements that may be termed mitigation having substantial influence on management are listed in Figure 2-1.

Research Natural Areas

The Ochoco National Forest presently has one established RNA, the Ochoco Divide Research Natural Area. In cooperation with the Federal Committee on Research Natural Areas, the Forest and Grassland has identified five additional areas that would meet the needs for RNA's representative of Central Oregon natural features. These areas have been identified for inclusion in the planning process for consideration in the final Forest and Grassland Plans. The direction for the identification and establishment of RNA's is specified in Forest Service Manual 4063 The RNA's acreages by management



area are displayed in Tables 2-6 and 2-7. They are also discussed in Chapter 3, pp. 3-19 through 3-20.

Alternatives

This section describes the six alternatives analyzed in detail in this FEIS. For each alternative, the primary goals and objectives are presented along with a description of how the alternatives respond to the ICO's.

Alternative NC

Goal and Purpose

The "no change" alternative (Alternative NC), described below, was developed in response to the Northwest Forest Resource Council request that a "true" no action alternative representing current management plans be described and included in forest plans and environmental impact statements

Alternative NC is very similar to the no action alternative (Alternative A) described and analyzed in the Draft Environmental Impact Statement. Both do not include the National Forest Management Act (NFMA) requirements and were based on the 1979 Timber Resource Plan and the four unit plans: Ochoco-Crooked River (1979), Silvies-Malheur (1978), South Fork (1978) and Crooked River National Grassland (1980). The Timber Resource Plan and Unit Plans currently guide land and resource management on the Forest and Grassland.

Alternative NC presently differs from draft Alternative A in that it is based on a different computer model, timber inventory, and yield tables. Also, there are some differences in the way old growth and big game habitat are to be managed, resulting in potentially different environmental effects. A Current Direction--NFMA Benchmark, created originally by applying management requirements to Alternative A, is described in the DEIS. It allows outputs and costs attributable to NFMA requirements to be isolated and compared. Since Alternative NC is based on the existing Timber Resource Plan, it does not incorporate requirements of the National Forest Management Act (NFMA), nor the implementing regulations (CFR 219 14-27, et al). For Alternative NC to be implemented, it would either have to be modified to meet NFMA requirements (as was done with Alternative Ain this FEIS), or some NFMA requirements would have to be legislatively amended to allow current practices to be continued.

Management Direction

The following assumptions guided the development of the No Change Alternative:

- 1. Only NFMA requirements that are a part of current direction as established in current multiple use plans, unit plans, and timber resource plans will be followed.
- 2. Land allocations and management direction.

Current plans will be used to fix the land allocation. An exception is where adjustments can be made to reflect updated, improved information on the suitability of land for timber production (this should include new inventory information, new land suitability classifications, etc.).

Management direction in existing plans will be adhered to in setting the management strategy for management areas.

Yield Tables

Yield tables affect the calculation of long-term sustained yield. The yield tables used in the 1979 Timber Resource Plan (the basis for Alternative NC) were developed in 1975 for the entire Blue Mountain area without benefit of computer models. One set of yield tables was made for each timber type (Appendix D, Timber Resource Plan, 1979). While representing the state-of-the-art at the time they were developed, the predicted yields now appear to be overly optimistic when applied to the Ochoco National Forest because:

Productivity on the Ochoco National Forest is below the average for the Blue Mountains, and Yields were based, in part, on the expectation that small material resulting from thinning would be merchantable, which, to date, has not happened.

The yield tables used for developing all alternatives except NC are based on prognosis models and adjusted to Ochoco National Forest conditions. Several different combinations of cultural treatments (e.g., planting, thinning, natural regeneration, extended rotation) were simulated and yields projected for each. Each alternative contains a combination of treatments that were selected by the FORPLAN model to best meet forest management objectives particular to each alternative.

Reconciling Unit Pans and the Timber Resource Plan with NFMA

The resource objectives of the unit plans and the Timber Resource Plan, the basis for Alternative NC, were not fully integrated and may not comply with current NFMA requirements. Taken a step further, the Current Direction with NFMA Benchmark, in the DEIS, shows the results of incorporating NFMA requirements into Alternative A. The result is Alternative A in this FEIS.

Modeling, Rotation Ages, and Timber Silvicultural Treatments

The amount of site preparation, planting, thinning, and other timber cultural work modeled in FORPLAN to achieve the resource objectives of Alternative A varies from that described for Alternative NC.

The Timber Resource Plan was modeled using Timber RAM (Resource Allocation Model), a linear program that is less sophisticated than the FORPLAN model used to develop the other alternatives. Timber RAM cannot consider economics or other resource constraints as FORPLAN does. For example, the potential yield in the Timber Resource Plan was based on the assumption that all available acres would be thinned. In reality, it is not economical to thin all stands, e.g, lodgepole stands on steep slopes. All calculations were based on application of shelterwood silvicultural system with planting, but the option of using other prescriptions was left open (Timber Resource Plan, pp. 15-16) and in practice other methods were used on the Forest. In fact, overstory removal has been the most common silvicultural system applied on the Forest. Rotation age in the old model was fixed at 130 years, but the FORPLAN model can select a rotation age that best meets management objectives. This varies from 95 percent of culmination of mean annual increment (CMAI) to 150 years, resulting in 90 to 100 year rotations in many areas on this Forest.

Terminology

Some of the terms used in the Timber Resource Plan and units plans differ from those used in the DEIS, Supplement to the DEIS, FEIS and the proposed action. For example, "commercial forest," "standard component," "special component," "marginal component," "unregulated" and other old terms have either been redefined or replaced with new terms that have similar, but not identical, definitions. This makes comparing Alternative NC with the other alternatives difficult and confusing (see Glossary).

Timber Inventories

Alternative NC was based on the 1972 timber inventory. Alternative A (and all other alternatives,) were based on the 1982 timber inventory. Both inventories were based on photo-typing, that is, delineating timber stands on aerial photographs. The 1982 inventory was field checked to a greater extent than the 1972 inventory.

A difficulty inherent in developing a timber inventory on the Ochoco is that the distinction between forested and nonforested land is not clear. For example, on parts of the Snow Mountain Ranger District and in the Maury Mountains, forested areas grade into the desert with no definable line separating the two. While this could result in acreage differences between the two inventories, the impact on volume would be minimal because the forest-desert transition is low productivity land.

The inventories were also structured differently. The 1972 inventory model was based on percent volume by species, while the 1982 inventory model was based on productivity by community types.

Timber Land Suitability

The method for determining timber land suitability in Alternative NC was different from the NFMAmandated methods used for Alternative A (and all other alternatives).

The suitable timber base in Alternative NC was taken from the Timber Resource Plan. Land allocations from the unit plans were deducted from the timber base in the reserved or deferred categories, or included as commercial forest land in one of four categories: standard component, special component, marginal component, or unregulated. The commercial forest land in the Timber Resource Plan (adjusted for the Oregon Wilderness Act) is 535,253 acres.

In developing Alternative A (and all other alternatives), tentative timber land suitability was developed according NFMA regulations. The lands identified as tentatively suitable for timber management total 533,177 acres. Final suitability varies by alternative. In Alternative A, 533,177 acres would be available for timber harvesting. The deductions from the tentatively suitable base are primarily the result of land allocations for wilderness, wilderness study areas, RNA's, roadless areas and old growth.

Potential Yield

The potential yield in Alternative NC, represented by the Timber Resource Plan adjusted to reflect the Oregon Wilderness Act, would be 133.8 MMBF. Because these yields include gains assumed but not realized from earned harvest effects (see discussion below), it is questionable whether they could be sustained in the long-run.

The allowable sale quantity (ASQ) under Alternative A would be 19.3MMCF, or 115 MMBF in the first decade. In addition, the Forest analyzed and displayed two alternatives in the DEIS (B and H) that would generate allowable sale quantities (ASQ) of 137 MMBF approximately the adjusted potential yield shown in the Timber Resource Plan. These alternatives were developed from the maximum timber benchmark and offered options for achieving high timber harvest levels in the near decades while still meeting one alternative level of NFMA requirements. However, the harvest levels for the alternatives discussed above are sustainable in cubic feet as both models calculated yields and controlled flow in cubic feet but not board feet. Harvest volume in board feet would decrease because the smaller trees that will be harvested in the future will produce fewer board feet in proportion to cubic feet than the large trees being harvested at the present time.

Old Growth

The major difference in the acreage shown in the suitable timber land base between Alternatives A and NC (533,177 versus 552,300) results from the way old growth is proposed to be managed under each. In Alternative NC, the approximately 32,860 acres that would be managed for old growth dependent wildlife is included as commercial forest land in the special component, which means these lands could be harvested, but at 60 to 70 percent reductions in yields. Old growth stands would be about 300 acres each and uniformly distributed over the Forest. Stands would be managed on a long rotation to provide optimum habitat for non-adaptive species in at least one-third of the stands at any time. This would be accomplished by periodic harvesting on a group selection or larger area basis.

In Alternative A, approximately 36,970 acres (29,800 acres of suitable timber land) would be managed as "dedicated" old growth. Dedicated stands would not be harvested and are deducted from the suitable timber base. They would remain in old growth condition unless changed by fire or other natural disasters.

Earned Harvest Effect

In the 1979 Timber Resource Plan the potential yield was increased 7.3 MMBF based on the intent to plant genetically improved stock. This is called the earned harvest effect and it allows additional volume to be harvested today because of practices expected to increase forest growth and yields in the future. In the proposed programmed harvest level, only a 1.1 MMBF increase was claimed because only a small amount of genetically-improved stock was

available for planting. Also, the primary silvicultural system used, overstory removal, has not required as much planting as was projected in the Timber Resource Plan.

In Alternative A, FORPLAN selected management practices that would maximize timber production, including thinning and planting genetically improved stock. Thus, the earned harvest effect influences Alternative A, but varies in amount and timing. This makes an exact comparison of the earned harvest effect between the NC Alternative and the other alternatives difficult.

Alternative A

Goal and Purpose

This alternative focuses on management under current direction. It is the "No Action" alternative required by NEPA, and can be used as a basis for comparison with other alternatives. The sources for present direction are:

- 1. Four "Unit Plans" (Ochoco Crooked River, Silvies - Malheur, South Fork of the John Day, and the Crooked River National Grassland). These Plans contain specific land use allocations and provide management direction for those allocations.
- 2. The Timber Resource Plan that provides the basis for the timber management program and specifies allowable harvest levels.
- 3. Forest Service Manuals and policy memos.

Where these sources may conflict, priority was given to the Unit Plans (as per Regional Direction 1920, 11/10/83). Present budget or funding, a type of Congressional emphasis, was considered to continue at current levels under this alternative.

Alternative A is the "Current Direction Benchmark" from the DEIS and not "A" as presented in the DEIS. This alternative does incorporate National Forest Management Act requirements.

This alternative in the FEIS uses eleven of the original 14 management area allocations from the DEIS. In addition, four new management areas

have been added to incorporate the new wild and scenic river allocations. Management under existing plans results in a blend of resource emphases, but the resources (timber, range, big game, roadless, scenic, riparian, and recreation) are all managed at a sustained level substantially greater than minimum and less than maximum potential.

Management Direction

Timber Supply and Forest Management

Timber harvest is scheduled on a nondeclining yield basis. Current direction is to intensively manage timbered stands to the degree consistent with other resource requirements identified in the Unit Plans. This involves planting harvested units with genetically superior seedlings, planting at increased stocking levels, precommercial thinning to control the spacing of trees, one to three commercial thinnings both to harvest trees early and concentrate growth on the remaining trees, and managing for a rotation age close to the point in time where average annual growth is highest. This type of management is planned for the majority of the Forest's acres. Other resource requirements for some lands may either prohibit timber harvesting (old growth and roadless recreation management), lengthen rotations (riparian areas and scenic corridors), or alter thinning practices (big game emphasis areas) The allowable sale quantity (ASQ) in the first decade that results from this mix of practices is 115 million board feet (19.5 million cubic feet).

Social and Economic Wants and Needs of Local Communities

Alternative A ranks fourth amongst the alternatives with a PNV of \$421 million. Jobs and payments to the counties would not change significantly with implementation of this alternative. This alternative provides next to the least recreational opportunities and wildlife emphasis and would influence local leisure time opportunities accordingly. Community cohesion would remain about the same as would community stability.

Livestock Grazing and Allotment Management

Current direction is to make forage available for livestock use at levels that do not cause conflicts with other resources. Restrictions on dollars available to the Forest and Grassland limit construction and reconstruction of structural improvements (e.g. water developments and fences), which limits forage availability. Management in riparian areas to meet State Water Quality Standards may also restrict forage availability, particularly when budgetary constraints reduce management options. The forage utilization would be in concert with management practices to rehabilitate riparian areas. There is some likelihood that AUM's on some or all allotments may have up to 10 percent reductions in the first decade to meet riparian area management objectives.

Riparian Management

Current direction for riparian areas entails meeting State Water Quality Standards. This would require improving riparian area conditions from "poor" to "fair" on approximately 7,000 riparian acres. Riparian areas tributary to streams with anadromous fisheries would be managed to provide "excellent" riparian conditions (approximately 5,400 acres).

Transportation System

Eight hundred forty-four miles of road would be maintained for passenger car travel in the first decade. This is estimated to remain relatively constant through the fifth decade. There would be 3,236 miles of road maintained for high clearance vehicles in the first decade, declining to 2,736 miles by the fifth decade.

Approximately 944 miles of road will be closed in the first decade, increasing to 1,734 miles in the fifth decade. Roads would be closed to protect the investment, to provide for public safety, to limit soil erosion and water quality degradation and to increase wildlife habitat effectiveness.

Big Game Habitat

Big game habitat receives primary management emphasis on 93,800 acres. On these areas, road use and thermal cover quantity, quality, and distribution would be controlled to provide high quality big game habitat. Three thousand three hundred-seventy elk could be supported through the first decade. This number would decline steadily to 2,690 by the fifth decade. This alternative exceeds the ODFW management objective of 2,600 elk.

Roadless Areas and Wilderness Study Areas

Lookout Mountain, Deschutes Canyon-Steelhead Falls, and Silver Creek would be managed to maintain their roadless character. Green Mountain and the Rock Creek-Cottonwood Creek area would be managed as a general forest allocation. The North Fork of the Crooked River would be retained as a Wilderness Study Area, 1125 acres, until a decision is made on the pending BLM environmental analysis. The Deschutes Canyon-Steelhead Falls area would be recommended for wilderness in its entirety, 10,000 acres less the wild and scenic river allocation (MA-D8).

Segments of the North Fork Crooked River, Crooked River, and the Deschutes River were classified as Recreational or Scenic Rivers under the Oregon Omnibus Wild and Scenic Rivers Act. Four new management areas have been developed to incorporate these legislated areas into Alternative A equaling 4030 acres. These include MA-23 North Fork Crooked River Recreation Corridor, MA-24 North Fork Crooked River Scenic Corridor, MA-G6 Crooked River Recreation Corridor and MA-G7 Deschutes River Scenic Corridor.

A more detailed discussion of the existing roadless areas on the Forest and Grassland is presented in Appendix C.

Scenic or Visual Resources

Corridors along most of the principal roadways throughout the Forest and Grassland would be managed to attain or retain scenic qualities This amounts to 83,450 acres.

Old Growth

Old growth would receive a comparatively high emphasis, with 36,970 acres dedicated as a management area. This represents 39 percent of the 93,800 acres remaining on the Forest and Grassland.

Fuelwood Supply

Personal use of firewood is provided for on both the Forest and Grassland. Generally, most of the firewood comes from timber harvest residues; some juniper cutting also occurs. Firewood volumes available for use total approximately 14,000 cords annually.

Snag Dependent Wildlife

Alternative A would provide 46 percent to 52 percent of the potential snag habitat on an average from the first through the fifth decade across the Forest and Grassland.

Winter Sports

A majority of the Forest and Grassland, including Lookout Mountain and Bandit Springs, would be open to winter sports activities. A cross-country ski trail system is in place at the Bandit Springs area. Snowmobiles would be allowed to access all areas of the Forest except wilderness.

Anadromous Fish

Alternative A would provide for a gradual increase in the production of steelhead smolt over time (see Table 2-8). This increase would be primarily due to the improved riparian habitat gained through improved management practices and stream enhancement work.

Historic Trail Preservation

The Summit Historic Trail would be managed as specified in the Decision Notice issued for this trail in 1986. It would not be allocated as a management area but rather, the appropriate visual quality objectives (VQO's) would be applied and the integrity of the trail preserved.

Off-Road Vehicle (ORV) Use

No all-terrain vehicle (ATV) trail development would occur under this alternative.

Round Mountain

There would be no special management consideration for this area.

Alternative B-Modified (DEIS Alternative B modified to incorporate industry comments)

Goal and Purpose

The design of Alternative B in the DEIS was an attempt to meet the Regional Guide 1980 Renewable Resource Planning Act (RPA) timber and range program targets with a timber harvest schedule based on nondeclining yield. Some of the wildlife-related RPA goals conflicted with timber and range objectives and were not achievable under this alternative. Alternative B focused on intensive management to produce timber and range outputs.

Alternative B-Modified in the FEIS follows the basic philosophy of the original Alternative B but emphasizes other resource management where compatible with timber. For some resources (selected roadless areas, visual corridors, etc), timber volume was given up to provide for these resources. Also, Alternative B-Modified incorporates 39 of the management areas from Alternative I (23 from Forest Plan and 16 from Grassland Plan).

Management Direction

Timber Supply and Forest Management

Timber harvest is scheduled on a nondeclining yield basis. Many of the available timbered lands are managed intensively for timber production in this alternative. This involves planting harvested units with genetically superior seedlings, planting at increased stocking levels, precommercial thinning to control the spacing of trees, one to three commercial thinnings to harvest trees early and concentrate growth on the remaining trees, and managing for a rotation age close to the point in time where average annual growth is highest. The resulting allowable sale quantity is 21.8 million cubic feet (130 million board feet in the first decade). With additional volumes from anticipated salvage sales and firewood, the total cubic foot volume provides 88 percent of the RPA goal for the planning period through the fifth decade.

Approximately 120,000 acres of ponderosa pine stands with the appropriate characteristics would be managed under an uneven-aged management strategy.

Social and Economic Wants and Needs of Local Communities

Alternative B-Modified ranks third among the alternatives with a PNV of \$455 million. Jobs and returns to the counties would be higher than the current situation. This alternative would increase logging and sawmill industry employment by about four percent (39 jobs) and remanufacturing industry employment by about three percent (35 jobs). The support sector would see a modest increase also.

This alternative provides the least opportunity for leisure activity as it has the lowest level of recreational and wildlife management emphasis.

This alternative provides for high commodity outputs at the expense of amenities, and community cohesion may be affected by the resultant polarization that would surface. Community stability could be a problem if the timber or forage supply was disrupted because of the local economic dependence on the timber and range industries. This alternative would not stimulate the local communities to diversify.

Livestock Grazing and Allotment Management

Potential forage production could build toward and exceed the 1980 RPA program level by the fifth decade, as projected in Table 2-8. This would require construction of 138 acres of structural and 13,100 acres of non-structural improvements in the first decade. The forage utilization would be in concert with management practices to rehabilitate riparian areas. There is some likelihood that the AUM's on some or all allotments may see up to 10 percent reductions in the first decade to meet riparian area management objectives.

Riparian Management

All riparian areas would be managed to meet State

Water Quality Standards. This would require improving riparian area conditions to "excellent" on 10,000 acres in the first decade, and on 17,500 acres by the fifth decade.

Transportation System

Eight hundred fifty miles of road will be maintained for passenger car travel in the first decade with an increase to 869 miles by the fifth decade. There would be 3,037 miles of road maintained for high clearance vehicles in the first decade, declining to 2,492 miles by the fifth decade.

There will be 913 miles of closed road in the first decade increasing to 2,123 miles in the fifth decade.

Big Game Habitat

Big game habitat would see some management emphasis on 171,490 acres of General Forest Winter Range on the Forest and an additional 35,440 acres on the Grassland. An average of 3,210 elk could be supported through the first decade. This number would decline steadily to 1,700 by the fifth decade. This alternative would fail to provide the ODFW planning benchmark of 2,600 elk in the fifth decade.

Roadless Areas and Wilderness Study Areas

Portions of Lookout Mountain, Deschutes Canyon-Steelhead Falls and Silver Creek would retain their roadless character with no scheduled timber harvest. A portion of the Deschutes Canyon-Steelhead Falls Wilderness Study Area (which was not made wilderness in the 1984 legislation), has been allocated to the Squaw Creek Management Area for unroaded recreation. The North Fork of the Crooked River Wilderness Study Area would be retained, 1,125 acres.

Segments of the North Fork Crooked River, Crooked River, and the Deschutes River were classified as Recreational or Scenic Rivers under the Oregon Omnibus Wild and Scenic Rivers Act. Four new management areas have been developed to incorporate these legislated areas into Alternative B-Modified (MA-F23 North Fork Crooked River Recreation Corridor, MA-F24 North Fork Crooked River Scenic Corridor, MA-G6 Crooked River Recreation Corridor and MA-G7 Deschutes River Scenic Corridor).

Eligibility and suitability determinations have been made for a portion of the Squaw Creek area. A 7.5 mile segment of the creek, 1,370 acres, from the Grassland boundary to the confluence with the Deschutes River would be managed as a "scenic river." In addition, it would be recommended for inclusion into the Wild and Scenic River System. This would be a preliminary recommendation that would receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. Congress has reserved the authority to make final decisions on designation of rivers as part of the National Wild and Scenic Rivers System.

A more detailed discussion of roadless areas on the Forest and Grassland is presented in Appendix C.

Scenic or Visual Resources

Corridors along most of the principal roadways throughout the Forest and Grassland would be managed to retain scenic values. Approximately 34,400 acres would be allocated to management areas with visual resource emphasis. This would include visual management zones along certain travel corridors such as Highway 26.

Old Growth

Old growth would receive low emphasis under this alternative, with 18,740 acres dedicated as a management area allocation. This represents 20 percent of the 93,800 acres remaining on the Forest and Grassland. The remaining old growth on the Forest outside the allocation by the fifth decade would be approximately 42,400 acres, 45 percent of the existing 93,800 acres.

Fuelwood Supply

Personal use of firewood would continue to be provided on the Forest and Grassland. Generally, most firewood would come from timber harvest residues. In the first decade, 15,000 cords would be provided annually. This figure would decrease to 13,000 cords by the fifth decade.

Snag Dependent Wildlife

Alternative B-Modified would provide 43 percent to 33 percent of the potential snag habitat from the first decade through the fifth across the Forest and the Grassland The decline over time would be the result of the intensive timber management.

Winter Sports

A majority of the Forest and Grassland would be open to all users including Lookout Mountain. The Bandit Springs Area would be managed for crosscountry skiing. Snowmobilers may access all areas of the Forest except for Bandit Springs and wilderness.

Anadromous Fish

Alternative B-Modified would provide a steadily increasing production of steelhead smolt over time (see Table 2-8). The increase is generally representative of the improved riparian area conditions over time through management practices and enhancement projects.

Historic Trail Preservation

The Summit Historic Trail would be managed to protect its historic qualities. It would not be allocated as a management area, nor would there be any special provisions. The appropriate VQO's would be applied to protect its scenic qualities

Off-Road Vehicle (ORV) Use

Under this alternative, steps would be taken to construct, reconstruct and designate existing trails for ORV use. The schedule calls for 95 miles in the first decade, increasing to 190 miles by the third through fifth decade. Some area closures would also be implemented in conjunction with trail designations and the identification of resource impacts.

Round Mountain

The scenic qualities and recreational opportunities supplied by the Round Mountain Trail would be recognized under this alternative through the allocation of 1,000 acres as the Round Mountain Management Area

Alternative C-Modified

Goals and Purpose

Alternative C-Modified emphasizes resources associated with amenity values, for example, riparian areas, visual corridors, roadless areas, recreation, and forest management designed to provide big game habitat. Old growth and snags would also be provided at high levels. Timber and range resources would be managed at relatively low levels.

This alternative in the FEIS uses 11 of the original 14 management area allocations from the DEIS. In addition, four management areas have been added to incorporate the new wild and scenic river allocations.

Management Direction

Timber Supply and Forest Management

Timber harvest is scheduled on a nondeclining yield basis. Timber management activities which are most economically efficient would be used while meeting other resource objectives. Other resource requirements for this alternative would either prohibit timber harvesting (old growth and roadless recreation management), lengthen rotations (riparian areas and scenic corridors), or alter thinning practices (big game emphasis areas). Approximately 170,000 acres of ponderosa pine stands with the appropriate characteristics would be managed under an uneven-aged management strategy. The allowable sale quantity in the first decade that would result from this mix of practices is 94 MMBF (15.6 MMCF).

Socio-Economic Analysis

Alternative C-Modified ranks fifth amongst the alternatives with a PNV of \$395 million. Jobs would see a significant drop under this alternative. Employment in the logging and sawmill industries would decrease by about two percent (21 jobs) and in the remanufacturing industry by about four percent (55 jobs). Other segments of the economy would see a slight gain in employment through the diversification of the local economy that this alternative would stimulate. This alternative could enhance community stability in the long run, but the short-term effect would be destabilizing. Returns to the counties would be the lowest of the alternatives discussed.

This alternative would provide the highest level of recreational, scenic and wildlife emphasis, and therefore would provide increased opportunities for leisure time pursuits. This heavy emphasis on amenities would disrupt community cohesion in the short run.

Livestock Grazing and Allotment Management

In the first decade forage would be made available for livestock use at levels slightly lower than is currently provided. Heavy emphasis on the improvement of riparian conditions and timber management designed to maintain dense timber stands for big game cover, account for the diminished level of forage for livestock use. As riparian conditions improve in the future more forage would likely be available. AUM's are expected to increase only slightly from present levels (from 73,100 to 74,400 AUM's).

Riparian Management

All major streams with existing or potentially significant fisheries will be managed to achieve an "excellent" condition. This will require improving 10,000 acres by the end of the first decade and a total of 17,500 acres by the end of the fifth decade.

Transportation System

Eight hundred fortymiles of road will be maintained for passenger car travel in the first through fifth decades. There would be 2,384 miles of road maintained for high clearance vehicles in the first decade, a decrease of 26 percent compared to the current situation. By the fifth decade, this would decrease to 1123 miles.

An estimated 1,520 miles of road would be closed in the first decade, increasing to 3,224 miles in the fifth decade.

Big Game Habitat

Big game habitat receives primary management emphasis on 732,530 acres. In these areas road use and cover quantity, quality, and distribution would be controlled to provide high quality big game habitat. A population of 3,740 elk could be supported through the first decade, decreasing to 3,700 by the fifth decade. This alternative would exceed the ODFW planning benchmark of 2,600 elk.

Roadless Areas and Wilderness Study Areas

The Silver Creek, Rock Creek/Cottonwood Creek, and Lookout Mountain roadless areas would be managed to maintain the present roadless character. Green Mountain would be partially developed to provide a semiprimitive setting with primitive roads for recreational use. All of Deschutes Canyon would be recommended for Wilderness in this alternative, 9,350 acres, except for that portion that has been incorporated into the Wild and Scenic River System. The North Fork of the Crooked River would be retained as a wilderness study area, 1125 acres.

Segments of the North Fork Crooked River, Crooked River, and the Deschutes River were classified as Recreational or Scenic Rivers under the Oregon Omnibus Wild and Scenic Rivers Act. Four new management areas have been developed to incorporate these legislated areas into Alternative A (MA-23 North Fork Crooked River Recreation Corridor, MA-24 North Fork Crooked River Scenic Corridor, MA-G6 Crooked River Recreation Corridor and MA-G7 Deschutes River Scenic Corridor).

A more detailed discussion of roadless areas on the Forest and Grassland is presented in Appendix C.

Scenic or Visual Resources

Corridors adjacent to all of the principal roadways throughout the Forest and Grassland would be managed for scenic qualities, totalling 101,100 acres.

Old Growth

Old growth would receive a high emphasis under this alternative, with 45,030 acres dedicated as a management area. This represents 48 percent of the 93,800 acres remaining on the Forest and Grassland.

Fuelwood Supply

Firewood for personal use would continue to be

provided on both the Forest and Grassland. Generally, most firewood comes from timber harvest residues. Some juniper cutting also occurs Road closures and the reduced timber harvest activity would limit access to firewood, supplying only 12,000 cords annually.

Snag Dependent Wildlife

Alternative C-Modified would provide 51 percent to 69 percent of the potential snag habitat on an average across the Forest and Grassland.

Winter Sports

The Bandit Springs area would be managed for cross-country skiers. Snowmobilers may access all areas of the Forest except for Bandit Springs, Lookout Mountain, and wilderness.

Anadromous Fish

Alternative C-Modified would provide for a gradual increase in the population of steelhead smolt over tume (see Table 2-8). This increase would be primarily due to the improved riparian habitat gained through improved management practices and stream enhancement work.

Historic Trail Preservation

The Summit Historic Trail would be managed as specified in the Decision Notice issued for this trail in 1986. Rather then allocate this area as a management area, the appropriate VQOs would be applied and the integrity of the trail protected.

Off-Road Vehicle (ORV) Use

Under this alternative, steps would be taken to construct, reconstruct and designate existing trails for ORV use. The schedule calls for 95 miles in the first decade, increasing to 190 miles by the third through fifth decades. Some area closures would also be implemented in conjunction with trail designations and the identification of resource impacts.

Round Mountain

There would be no special provisions or allocations for Round Mountain under this alternative.

Alternative E-Departure -Preferred Alternative in DEIS

Goal and Purpose

Alternative E-Departure emphasizes a combination of timber production, roadless recreation, and big game habitat. Timber is scheduled as a departure from nondeclining yield. Timber harvests are scheduled so that first decade volumes remain close to current levels and then decline gradually over the next 50 years. The alternative is designed to maintain local jobs in the short term. All resources are managed or maintained at moderate levels.

This alternative in the FEIS has the same 14 management area allocations as the DEIS. In addition, four new management areas have been added to update the alternative with the new wild and scenic river designations.

Management Direction

Timber Supply and Forest Management

Timber harvest is scheduled as a departure from the nondeclining yield harvest levels set in Alternative E. The objective is to approximate current harvest levels for one decade and then decline to a sustainable level. The actual trend would be a decline followed by a slight rise and then a leveling off (see Figure IV-2 from the Draft Plan, p. 35). The allowable sale quantity for the first decade would be 20.6 MMCF (123 MMBF), declining to 19.7 MMCF in decade two, and 16.1 MMCF in decade five. All timber would be managed under even-aged management strategies.

Timber management activities which are most economically efficient would be used while meeting other resource objectives. Other resource requirements for this alternative may either prohibit timber harvesting (old growth and roadless areas), lengthen rotations (riparian areas and scenic corridors), or alter thinning practices (big game emphasis areas).

Social and Economic Wants and Needs of Local Communities

Alternative E-Departure ranks second among the

alternatives with a PNV of \$471 million. Employment in the logging, sawmill, and remanufacturing industries would increase about three percent in the short run, followed by a significant decline. The support and other sectors of the local economy would experience a modest increase. Payments to the counties would increase four percent.

This alternative would not be expected to significantly alter leisure lifestyles or community cohesion. The departure from a nondeclining harvest would adversely affect community stability over time.

Livestock Grazing and Allotment Management

Potential forage production could build over time as projected in Table 2-8. This would require construction of 138 acres of structural and 13,100 acres of non-structural improvements in the first decade The forage utilization would be in concert with management practices to rehabilitate nparian areas There is some likelihood that the AUM's on some or all allotments may see up to 10 percent reductions in the first decade to meet riparian area management objectives. As riparian conditions improve in the future, additional forage could made available.

Riparian Management

Major streams containing anadromous fisheries, or with high-valued resident trout fisheries, would be managed to achieve an "excellent" condition (9,400 acres). The remaining would be divided equally between "good" and "fair" conditions

Transportation System

Eight hundred forty miles of road would be maintained for passenger car travel in the first decade, essentially no change from the current situation. This would be maintained out through the fifth decade. There would be approximately 3,050 miles of road maintained for high clearance vehicles in the first decade, only slightly lower than the current situation. Roads open to high clearance vehicles would decrease significantly through the fifth decade to 2330 miles.

A estimated 890 miles of road would be closed in the first decade, increasing to 2082 miles in the fifth

decade. Roads would be closed to protect the investment, to protect public safety, to limit soil erosion and water quality degradation, and to increase wildlife habitat effectiveness.

Big Game Habitat

Big game habitat receives primary management emphasis on 253,320 acres of the Forest and Grassland. Most of this represents high priority winter range. In these areas, road use and cover quantity, quality, and distribution would be controlled to provide high quality big game habitat. A population of 3,170 elk could be supported in the first decade, declining to 2,780 in the fifth decade. This alternative would exceed the ODFW planning benchmark of 2,600 elk.

Roadless Areas and Wilderness Study Areas

The Rock Creek/Cottonwood Creek area, Silver Creek and the top of Lookout Mountain, would be managed to retain the present roadless character. The remainder of Lookout Mountain would be allocated to general forest. Green Mountain would be partially developed to provide a semiprimitive setting with primitive roads for recreational use. In the Deschutes canyon, an area of 2,500 acres would be recommended for wilderness. The remainder of the Deschutes canyon would be managed under a big game emphasis. The North Fork of the Crooked River would be retained as a wilderness study area, 1125 acres, until a decision is made on the BLM environmental analysis.

Segments of the North Fork Crooked River, Crooked River, and the Deschutes River were classified as Recreational or Scenic Rivers under the Oregon Omnibus Wild and Scenic Rivers Act. Four new management areas have been developed to incorporate these legislated areas into Alternative A (MA-23 North Fork Crooked River Recreation Corridor, MA-24 North Fork Crooked River Scenic Corridor, MA-G6 Crooked River Recreation Corridor and MA-G7 Deschutes River Scenic Corridor).

A more detailed discussion of the roadless areas on the Forest and Grassland is presented in Appendix C.

Scenic and Visual Resources

Forty-six thousand two hundred acres of travel corridors would be managed for scenic qualities. These include major roads, access roads to roadless management areas, and a special scenic recreation travel corridor on the Big Summit District.

Old Growth

Twenty-six thousand three-hundred and forty acres would be specifically allocated to old growth management. This represents 28 percent of the remaining old growth on the Forest and Grassland.

Fuelwood Supply

Personal firewood would continue to be provided for on both the Forest and Grassland. Generally, timber harvest residues provide the majority of wood gathered. This alternative would supply 13,100 cords annually in the first decade, declining to 10,000 cords annually by the fifth decade.

Snag Dependent Wildlife

This alternative would provide 46 percent to 50 percent of the potential snag habitat on an average across the Forest and Grassland, from the first through the fifth decade.

Winter Sports

A majority of the Forest and Grassland would be open for winter recreation. Bandit Springs would be managed for cross-country skiers Snowmobilers could access all areas of the Forest except for Bandit Springs, the top of Lookout Mountain, and Wilderness. A special recreation corridor from Bandit Springs east, and south to Lookout Mountain, would be managed to provide pleasing scenery. This corridor would include the Round Mountain Trail.

Anadromous Fish

Alternative E-Departure would provide for a gradual increase in the population of steelhead smolt over time (see Table 2-8). This increase would be primarily due to the improved riparian habitat gained through improved management practices and stream enhancement work.

Historic Trail Preservation

The Summit Historic Trail would be managed as specified in the Decision Notice issued for this trail

in 1986. It would not be allocated as a management area, but rather the appropriate VQO's would be applied and the integrity of the trail protected.

Off-Road Vehicle (ORV) Use

No ATV trail development is planned under this alternative.

Round Mountain

The Round Mountain Trail would be managed as a part of the special recreation corridor from Bandit Springs to Lookout Mountain.

Alternative I (Preferred Alternative)

Goal and Purpose

Alternative I separates the plans for the Forest and Grassland. This is the result of public comment suggesting that the Grassland be handled in a separate plan to maintain its identity as a National Grassland. Alternative I is the final preferred alternative.

The Final Forest Plan expands the number of management areas from 14 in the Draft to 28. The expansion represents the Forest response to the public comments on the DEIS. Emphasis was increased in timber/forage production and recreation. A number of new management areas are designated to emphasize special features, including Stein's Pillar, Bandit Springs and Lookout Mountain.

The Final Grassland Plan expands the number of management areas from eight in the Draft to 16. As with the Forest Plan, the expansion is the result of public comment and new information. The change represents increases in management emphasis for wildlife, recreation, and riparian area management.

Management Direction

Timber Supply and Forest Management

A number of changes to the Draft Plan are incorporated into this alternative. Timber harvest would be scheduled on a nondeclining yield basis and there would be no scheduled harvest from the Grassland. The suitable land base for forest management activities within this planning period is 533,177 acres. Uneven-aged management would be applied to ponderosa pine stands with characteristics lending themselves to this type of management. The estimated scheduled timber volumes, harvest type, rotation age or size, and estimated potential contribution to ASQ by management area grouping are:

Group I

92,200 Acres - 11%
No scheduled treatment

Black Canyon Wilderness
Bridge Creek Wilderness
Mill Creek Wilderness
N.F.C.R. Wilderness Study
RNA's
Old Growth
Summit Trail (preservation)
Rock Creek/Cottonwood Creek Unroaded
Silver Creek Unroaded
Lookout Mountain
Facilities

Group II

18,130 Acres - 2%
Silviculture - Even- or uneven-aged
Rotation Age - 200 years
Diameter 20"+
Average annual cu ft. volume - 0.3 MMCF 15. Riparian

Group III

3,240 Acres - <1%
Silviculture - Even- or uneven-aged
Rotation age - 300 years
Diameter 30"
Average annual cu.ft. yield - <0.1 MMCF
12. Eagle Roosting
17. Stein's Pillar
19. Deep Creek
24. N.F.C.R. Scenic River

Group IV

28,110 Acres - 3% Silviculture - Even- or uneven-aged Rotation age - Pine 250 years, mixed conifer 200 years Average annual cu.ft. yield - 0.4 MMCF 7. Summit Trail (retention) 13. Developed Recreation 14. Dispersed Recreation 16. Bandit Springs 25. Hwy 26 Corridor 26. Visual Management - (retention) 27. Round Mountain National Recreation Trail Group V 32,140 Acres - 4% Silviculture - Even- or uneven-aged Rotation age - Pine 200 years, mixed conifer 150 years Diameter - Pine 27", mixed conifer 22" Average annual cu.ft. yield - 0.6 MMCF 7. Summit Trail (partial retention) 18. Hammer Creek

Group VI

64,130 Acres - 8% Silviculture - Even-aged Rotation age - Pine 125 years, mixed conifer 90 years Diameter - Pine 16", mixed conifer 15" Average annual cu.ft. yield - 0.9 MMCF 20. Winter Range

26. Visual Management (partial retention)

23. N.F.C.R. Recreation River

Group VII

606,690 Acres - 72% Silviculture - Even- or uneven-aged Rotation age - Pine 130 years, mixed conifer 90 years Diameter - Pine 18", mixed conifer 16" (unevenaged 20") Average annual cu.ft. yield - 16.8 MMCF 9. Rock Creek/Cottonwood Creek Helicopter 21. General Forest Winter Range 22. General Forest

The ASQ would be 19.0 MMCF (115 MMBF) per year in the first decade. Of this, approximately 82 MMBF per year for the first decade would be in ponderosa pine. The desired ASQ would be attained through a planned harvest schedule to allow

FIGURE 2-2 Planned Harvest For 1990-1999 (Glide Path) (MMBF not including salvage)

	YEAR						
	1990	1991	1992	1993	1994		
ASQ	124	121	118	114	113		
	YEAR						
	1995	1996	1997	1998	1999		
ASQ	112	112	112	112	112		

the reduction from the current situation to the 115 MMBF using a glide path shown in Figure 2-2.

Social and Economic Wants and Needs of Local Communities

Alternative I has the highest PNV of the alternatives, \$501 million.

Employment in the logging and sawmill industries would increase about two percent (15 jobs). The commodity resource side of this alternative would provide a stable supply of timber and forage over time, providing community stability, baring any unforeseen disruptions in these supplies. Opportunities would also be created for diversification of the economy due to the increased emphasis on recreation, scenic and wildlife resources.

This alternative would have a positive effect on leisure lifestyles, providing a range of recreational needs and provisions for wildlife habitat. The balanced resource program would have a positive effect on community cohesion.

Livestock Grazing and Allotment Management

This alternative would incorporate new east-side forest utilization standards based on vegetation type, range condition and management strategies. Separate standards are provided for riparian areas and the remainder of the Forest and Grassland Potential forage production could build as projected in Table 2-8. The emphasis on the improvement of all riparian areas to "excellent" condition, along with 138 acres of structural and 20,980 acres of nonstructural range improvements, could provide for an additional capacity by the fifth decade of 84,000 AUM's. The forage utilization would be in concert with management practices to rehabilitate riparian areas. There is some likelihood that the AUM's on some or all allotments may see up to 10 percent reductions in the first decade to meet riparian area management objectives.

Riparian Management

All riparian areas would be managed as "excellent." Riparian corridors on 40 miles (1,000 acres) of high value streams would be emphasized to provide "connective habitat." Riparian area improvements and management practices would enhance 10,000 acres in the first decade and expand that to 17,500 acres by the fifth decade.

Transportation System

Eight hundred forty miles of road would be managed for passenger car travel in the first decade, remaining stable through the fifth decade, 850 miles. There would also be 2,330 miles of high clearance roads maintained in the first decade, slightly declining to 2,270 by the fifth decade.

There will be 1,560 miles of roads closed in the first decade, increasing to 2,190 miles by the fifth decade.

There would be additional emphasis on ORV management and control through the application of standards and guidelines and the Travel Plan. In addition, the need for additional planning to assess ORV management needs on open areas, such as General Forest (MA-F22) and General Forage (MA-G3), would occur as implementation actions.

Big Game Habitat

Big game habitat receives primary management emphasis on 230,480 acres. A major portion of this acreage recognizes winter range values, 206,930 acres on four management areas. The area receiving emphasis for winter range values in this alternative is an increase over the Draft. In this alternative there is no specific allocation for big game summer range, however, road use and cover quantity, quality and distribution would be controlled to provide the desired habitat effectiveness. A population of 3,000 elk could be supported in the first decade, decreasing to 2,620 by the fifth decade. This alternative would exceed the ODFW planning benchmark of 2,600 elk.

Roadless Areas and Wilderness Study Areas

The Green Mountain proposal for semiprimitive motorized recreation (the area remaining roadless) was dropped for reasons of no apparent public interest or support. Also soil erodibility and slopes were found not to be suitable for that use.

A portion of the Rock Creek/Cottonwood Creek area would be managed for unroaded recreation. A portion of the area which was determined to be economical for timber management was allocated to general forest and unroaded helicopter management areas. Steeper areas were reserved for roadless area management, or helicopter logging to protect watershed, anadromous fisheries, recreation, and wildlife values.

The Silver Creek area would remain roadless and the boundary adjusted to a more manageable boundary along the canyon rim.

The Lookout Mountain area, allocated to unroaded recreation, increased from 2,950 acres to 15,660 acres in the first decade. The entire roadless area, plus road corridor, would be treated as a separate management unit. Planning for stand treatments would begin in the first decade. The lower portion of the management area would be managed for the enhancement of forest health, scenery, wildlife and recreation from the second through the fifth decades, leaving a 7,550- acre area unroaded.

A portion of the Deschutes River-Steelhead Falls Wilderness Study Area and a additional area outside the WSA in Squaw Creek are combined to form a 7,840-acre management area emphasizing semiprimitive, nonmotorized recreational opportunities and wildlife habitat management. The 5,200-acre draft wilderness proposal would be dropped. The majority of the remainder of the draft proposed wilderness was included in the Deschutes Scenic River Corridor classified by the Oregon Wild Rivers Act in 1988.

Eligibility and suitability determinations have been made for a portion of the Squaw Creek area. A 7.5 mile segment of the creek, 1,370 acres, from the Grassland boundary to the confluence with the Deshutes River would be managed as a "scenic river." In addition, it would be recommended for inclusion into the Wild and Scenic River System. This would be a preliminary recommendation that would receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. Congress has reserved the authority to make final decisions on designation of rivers as part of the National Wild and Scenic Rivers System.

A more detailed discussion of the roadless areas on the Forest and Grassland is presented in Appendix C.

Scenic or Visual Resources

The immediate foreground viewing area surrounding recreational developments (campgrounds) would be assigned a retention visual management objective. The miles of road with visual management objectives increased from the Draft to 384 miles in the Final. The width of the viewing corridor used in calculations was changed from more than 2,640 feet to 1,200 feet. The entire Summit National Historic Trail corridor was assigned a visual management objective relative to cultural aspects of the particular trail segment. Round Mountain National Recreation Trail management corridor reduced in width from >2,640 feet to 1,200 feet. Added were 560 acres of viewing area from Lake Billy Chinook reservoir on the National Grassland.

No middle ground viewing areas would be allocated as management areas.

Old Growth

Old growth would receive emphasis in this alternative with 19,990 acres dedicated in two management areas (MA-F6, MA-G5). Additional old growth would be retained in other management areas (wilderness, the wilderness study area and RNA's), totalling 2,400 acres. That portion of the old growth on the Forest amounts to 23 percent of the 93,800 acres of old growth remaining. Alternative I also added 1,000 acres of connective habitat in the riparian management area allocation to link up old growth stands to enhance their effectiveness for old growth dependent species.

Fuelwood Supply

Personal use of firewood would continue to be provided for on both the Forest and Grassland. Generally, most firewood comes from timber harvest residues. In the first decade, 13,000 cords would be provided annually. This supply would decrease to 11,000 cords annually by the fifth decade.

Snag Dependent Wildlife

Alternative I would provide 47 percent to 54 percent of the potential snag habitat for the first through the fifth decades across the Forest and Grassland.

Winter Sports

The Bandit Springs Management Area, 1,580 acres, is allocated to provide winter recreational opportunities for cross-country skiing and other nonmotorized winter recreation activities. Most of the remaining Forest and Grassland would be open to snowmobile access, including Lookout Mountain. Exceptions would include such areas as winter range areas, wilderness and the wilderness study area.

Anadromous Fish

Alternative I would provide for a gradual increase in the population of steelhead smolt over time. This increase would be primarily due to the improved riparian habitat gained through improved management practices and stream enhancement work.

Historic Trail Preservation

The Summit Historic Trail would be treated as a management area allocation with emphasis on preserving the historic and scenic qualities of the trail, 9,560 acres.

Off-Road Vehicle (ORV) Use

Under this alternative, steps would be taken to construct, reconstruct and designate existing trails for ORV use. The schedule calls for 95 miles in the first decade, increasing to 190 miles by the third through fifth decade. Some area closures would also be implemented in conjunction with trail designations and the identification of resource impacts.

Round Mountain

The scenic qualities and recreational opportunities supplied by the Round Mountain Trail have been recognized in this alternative through the allocation of 1,000 acres as the Round Mountain Management Area.

Comparison of Alternatives

Overview

The purpose of Forest planning and the process of formulating alternatives has been discussed previously in this chapter. In this chapter, as part of the alternative selection and analysis phase, interalternative comparisons of alternatives have been made. The elements of alternatives that have been comparatively evaluated include:

- -responsiveness to issues and concerns,
- -management areas,
- -resource outputs,
- -environmental effects, and
- -costs and benefits.

In addition to tables presenting information, there are narrative sections that qualitatively describe differences between the alternatives.

The following pages summarize in tables and narrative the outputs and effects that differ significantly among alternatives.

Summary of tables providing alternative comparisons:

- Table 2-1 Disposition of Alternatives Considered in the Final
 Table 2-2 Summary of Supply & Demand for Crooked River National Grassland
 Table 2-3 Summary of Supply & Demand for Ochoco National Forest
 Table 2-4 Outputs & Effects of Required
- Table 2-4Outputs & Effects of RequiredBenchmarks

Table 2-5	Maximum Resource Outputs Com- parison with Alternative Outputs
Table 2-6	Resource Emphasis Acreages by Al- ternative
Table 2-7	Acreages in Management Areas by Alternative
Table 2-8	Quantitative Resource Outputs, Environmental Effects, Activities and Costs By Alternative
Table 2-9	Indicators of Responsiveness of Alternatives to Issues, Concerns and Opportunities
Table 2-10	Comparison of Past, Present, and Alternative Timber Outputs
Table 2-11	Timber Resource Management In- formation by Benchmark and Alter- native
Table 2-12	Present Net Value and Discounted Costs and Benefits of Alternatives
Table 2-13	Present Net Value and Discounted Costs and Benefits by Resource Group
Table 2-14	Annual Cash Flows and Non-cash Benefits in the First and Fifth Dec- ades by Alternative
Table 2-15	Changes in Employment for Vari- ous Economic Sectors by Alterna- tive

Issues, Concerns and Opportunities

Alternatives with different goals and resource objectives present ways of responding to issues and concerns. Table 2-9 (pp. 2-78 through 2-79) displays how each alternative responds to the Forest and Grassland's issues and concerns. Table 2-10 (pg. 2-88) compares alternative timber outputs to historical levels.

Management Areas

Management areas are defined by the area where particular management prescriptions apply. Management areas are treated in accordance with Forest-wide standards and guidelines and the individual management area's prescription in order to achieve a desired future condition. Standards and guidelines function to describe management practices, their intensity, and the timing to achieve intended goals and objectives for the management area

At the same time, standards and guidelines must provide for protection of resources, and contain mitigation measures which minimize any adverse environmental effects.

The standards and guidelines were developed by an Interdisciplinary Team specifically to respond to environmental conditions on the Forest and Grassland. Some of these were adopted from the Regional Guide. For a more complete description of standards and guidelines refer to Appendix D.

Each alternative is represented by different combinations of management areas. The acres by management area may vary by alternative also (Tables 2-6 & 2-7). The management area allocations for each alternative are shown on the maps included in the map packets for this FEIS.

Land and resource management goals for each management area are summarized below. Management area goals and desired conditions from the DEIS have also been carried forward and are represented in Alternatives A, C-Modified, and E-Departure.

Draft Management Areas

MA-D1. General Forest

Emphasis:

The primary management objective is to produce timber and livestock.

Desired Condition:

Timber management activities will include planting genetically improved stock, natural regeneration, precommercial thinning, commercial thinnings, and regeneration harvests generally at or near culmination of mean annual increment. Timber stands will generally be even-aged, 20 to 40 acres in size, with relatively uniform spacing. The largest trees in managed stands will be 16 to 18 inches DBH. Forage production for livestock will be enhanced by most timber harvesting activities and by range improvement activities, including the use of prescribed fire and the construction of additional water sources.

MA-D2. Big Game Winter Range

Emphasis:

The primary management objective is to produce winter range habitat of sufficient quality to ensure high big game survival potentials.

Desired Condition:

A quality big game winter range habitat will be brought about, over time, through vegetative treatment, including timber harvests and prescribed fire. These activities will be designed to create an optimal relationship between the size and spacing of thermal cover units for maximum deer and elk use. Open road densities will be kept low to limit the amount of disturbance to big game from vehicle traffic. Livestock grazing will be monitored and controlled to ensure sufficient forage for big game. Uneven-aged management has been added to Alternative C-Modified, and it will have an effect on a portion of this management area. It is not known at this time how close those acres managed under this silvicultural system will be to the desired future condition specified for this management area.

MA-D3. Big Game Summer Range

Emphasis:

Management is directed towards ensuring big game habitat of sufficient quality for high production levels of deer and elk.

Desired Condition:

A quality big game habitat will be brought about, over time, through timber harvest and other vegetative treatments. These activities will create an optimum relationship between the size and spacing of cover units and forage areas for maximum deer and elk use. Open road density will be kept low to limit the amount of disturbance to big game from vehicle traffic.

Uneven-aged management has been added to Alternative C-Modified, and it will have an effect on a portion of this management area. It is not known at this time how close those acres managed under this silvicultural system will be to the desired future condition specified for this management area.

MA-D4. Old Growth

Emphasis:

The management emphasis on these lands is to provide habitat for wildlife species dependent on old growth habitat.

Desired Condition:

Timbered stands of 300 acres or greater in size will contain mature and overmature trees in a multilayered canopy. Standing dead and down material will also be a significant component of the stand. Stands managed for old growth will generally be distributed throughout the Forest. To create this pattern, existing old growth stands will be utilized where possible. If no suitable old growth exists, areas capable of becoming old growth will be managed to bring the stand to an old growth habitat condition as rapidly as possible.

MA-D5. Retention Foreground

Emphasis:

The primary management emphasis of these areas is to provide scenic views that retain or enhance natural beauty.

Desired Condition:

Lands in this management area are comprised of the seen area immediately adjacent to areas of very high recreational use. Management activities will only repeat form, line, color, or textures frequently found in a natural landscape. Changes to the scenery will not be visually apparent to the casual Forest user. Where possible, forested areas will contain a major component of large ponderosa pine in open, parklike stands.

MA-D6. Partial Retention Foreground

Emphasis:

Management in these areas is directed towards providing scenic views that partially retain natural beauty.

Desired Condition:

Lands in this management area are comprised of the seen area immediately adjacent to areas of high recreational use. Management activities maychange form, line, color, or texture but should remain subordinate to natural patterns and not dominate the landscape. Where possible, forested areas will contain a major component of large ponderosa pine in open, parklike stands.

MA-D7. Partial Retention Middleground

Emphasis:

These areas provide scenic views that partially retain natural beauty, with man's activities remaining visually subordinate to the natural landscape.

Desired Condition:

Lands in this management area are located in the visual middleground adjacent to areas managed under a retention prescription (Management Area #D5). Management activities may change form, line, color, or texture but should remain subordinate to natural patterns and not dominate the landscape. When viewed from a highway, widely dispersed, small timber harvesting units will be visible, but will be shaped to the terrain.

MA-D8. Wilderness

Emphasis:

Protect the Wilderness ecosystems. Manage to maintain a natural setting and preserve solitude. (This management area has changed from the Draft and presently applies to the Deshutes Canyon-Steelhead Falls area for Alternatives C-Modified and E-Departure only.)

Desired Condition:

These areas are to be managed in a manner". .where the earth and its community of life are untrammeled by man..." and where "...natural processes operate without interference by man..." Opportunities for solitude and challenge are offered away from the sights and sounds of motorized mechanical vehicles or equipment. Scientific information may be sought without the intrusion of permanent improvements or motorized equipment. Special exceptions provided in the Oregon Wilderness Act will be allowed.

MA-D9. Semiprimitive Nonmotorized

Emphasis:

The management goal for these areas is to administratively provide near-natural, unroaded, and undeveloped recreational opportunities.

Desired Condition:

Motorized vehicles are excluded except for oversnow vehicles, allowing for a semiprimitive nonmotorized recreational experience. Generally, interaction between users is low, but there is often evidence of other users. Natural processes will generally be operating without human interference, but management may occur to protect or enhance roadless qualities.

Motorized equipment such as chainsaws may be used in the management and maintenance of these areas. Nonmotorized mechanized equipment, such as "mountain bikes" and wheel-barrows, is acceptable. River corridors that are eligible for designation as Scenic Rivers under the Wild and Scenic Rivers Act are included in this management area.

MA-D10. Semiprimitive Motorized

Emphasis:

The management emphasis on these lands is to provide challenging motorized recreational opportunities in a natural appearing environment free from developed roads, highway vehicles, and concentrations of people.

Desired Condition:

This Management Area contains selected roadless areas that meet these goals. Management is directed towards maintaining a natural appearing setting for off-road vehicle use while maintaining other resource values.

MA-D11. Developed Recreation

Emphasis:

The management goal at these sites is to provide and maintain safe, healthful, and aesthetically pleasing recreational facilities.

Desired Condition:

This applies to sites currently developed or planned for parking, camping, picnicking, boating and other recreational activities.

MA-D12. Research Natural Areas

Emphasis:

The management goal of these areas is to preserve Research Natural Areas (RNA's) as scientific benchmarks.

Desired Condition:

This management area contains natural or nearly undisturbed areas which are representative of important forest and range land ecosystems. These areas fulfill identified needs for completion of the Regional RNA system. The RNA's will preserve natural ecosystems for research, education, and comparison with those affected by human activities

MA-D13. Riparian in Acceptable Condition

Emphasis:

The primary management emphasis of these areas is to improve poor riparian areas to a fair condition, and to maintain existing conditions in other riparian areas.

Desired Condition:

Streambank vegetation will be managed to maintain or improve streambank stability and fish habitat as needed to meet this objective. Water temperatures will generally not be increased in major streams. Temperatures in other streams will not deteriorate downstream fish habitat. Natural, large, woody material will be provided. Range allotment plans will reflect forage utilization levels necessary to meet brush and hardwood protection needs.

MA-D14. Riparian in Excellent Condition

Emphasis:

Management in these areas will ensure that riparian areas are maintained or improved to provide excellent streambank stability and fish habitat in 15 years.

Desired Condition:

Streambank vegetation will be managed to provide the amount of cover and shade needed to meet this objective. Water temperatures will not be increased in major streams, and may need to be decreased in some areas. Temperatures in other streams will contribute to improved downstream fish habitat. Natural, large, woody material will be provided to help achieve high quality fish habitat. Range allotment plans will reflect forage utilization levels necessary to meet brush and hardwood protection needs.

Forest Management Areas

The land and resource management emphasis and goals for the management areas for Alternative I are summarized on the following pages. The 28 management areas for the Forest and the 14 management areas for the Grassland are presented in narrative form to provide a picture of the physical description, management emphasis, and desired future condition of each area. The standards and guidelines that apply to each of the Management Areas and the Forest-wide Standards and Guidelines are presented in Chapters 4 of the Forest and Grassland Plans.

MA-F1. Black Canyon Wilderness

Emphasis:

Protect the wilderness ecosystems. Manage use to maintain a natural setting and preserve solitude.

Desired Condition:

The Black Canyon Wilderness will be as natural as is possible, with little evidence of human activity. The area will be a place of natural settings with opportunities for solitude. Present road access and hunter caches and camps will be rehabilitated so their presence is no longer a dominant land feature. Recreational improvements, such as trailheads and access trails, will be evident where they are necessary to control use in order to preserve wilderness qualities. Livestock use will be evident, but the successful application of allotment management requirements will also be evident.

Old growth stands will be evident within the Management Area, along with those wildlife species in the Ochoco National Forest which are dependent on old growth habitat. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat. Tree mortality, resulting from past spruce budworm and other endemic insects and pathogens, will be evident, along with associated changes in fuel loadings and plant succession. Fire occurrence will be evident where lightning starts occur.

MA-F2. Bridge Creek Wilderness

Empasis:

Protect the wilderness ecosystems. Manage use to maintain a natural setting and preserve solitude. The area will be managed as a trailless wilderness where people can use their orientation skills.

Desired Condition:

The Bridge Creek Wilderness will be as natural as possible, with little evidence of human activity. The area will be a place of natural settings where solitude may be sought. Present road access will be rehabilitated so that its presence is no longer a dominant land feature. Recreational improvements, such as trailheads and access trails, will not be evident, but entry points will be signed where necessary to control use and to preserve wilderness qualities.

Livestock use will be evident, but the successful application of allotment management requirements will also be evident. Riparian areas in less than desirable condition will show evidence of recovery from the application of mitigation and rehabilitation measures.

Old growth stands will be evident within the Management Area, along with those wildlife species in the Ochoco National Forest dependent on old growth habitat. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat.

Tree mortality, resulting from past Mountain Pine Beetle infestations and other endemic insects and pathogens will be evident, along with associated changes in fuel loadings and plant succession. Fire occurrence will be evident where lightning starts occur.

MA-F3. Mill Creek Wilderness

Emphasis:

Protect the wilderness ecosystems. Manage use to maintain a natural setting and preserve solitude.
Desired Condition:

The Mill Creek Wilderness area will be as natural as possible, with little evidence of human activity. The area will be a place of natural settings where solitude may be sought. Present road access will be rehabilitated so that its presence is no longer a dominant land feature. Recreational improvements, such as trail heads and access trails, will be evident where necessary to control use to preserve wilderness qualities. Livestock use will be evident, but the successful application of allotment management requirements will also be evident. The stock driveway in the northeast portion of the Wilderness will be evident due to its routine use in association with the Mill Creek Allotment.

Old growth stands will be evident within the Management Area, along with those wildlife species dependent in old growth habitat on the Ochoco National Forest. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat.

Tree mortality, resulting from past Mountain Pine Beetle and other endemic insects and pathogens, will be evident along with associated changes in fuel loadings and plant succession. Fuel loadings will become very significant along the south side of Forest Road 27 and will pose a serious fire risk. Fire occurrence will be evident where lightning and humancaused starts occur. There may be planned ignitions to achieve wilderness objectives.

Minerals activities on valid mining claims will be evident along with authorized access under approved plans of operation.

MA-F4. North Fork Crooked River Wilderness Study Area

Emphasis:

Management will maintain the existing conditions of the area pending a decision by Congress on wilderness designation.

Desired Condition:

The wilderness study area will be as natural as possible with reduced evidence of human activity. The area will be a place of natural settings where solitude may be sought. Present road access, and hunter caches and camps, will be rehabilitated. Recreation improvements, such as trail heads and access trails, will be evident where necessary to control use in order to preserve wilderness qualities. Livestock use will be evident, but the successful application of allotment management requirements will also be evident. Riparian areas in less than desirable condition will show evidence of recovery from the application of mitigation and rehabilitation measures.

Old growth stands will be evident within the management area, along with those wildlife species in the Ochoco National Forest dependent on old growth habitat. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat.

The Final Environmental Impact Statement for Wilderness by the BLM has not been published, but a decision on the status of this area along with the adjoining BLM lands is pending. If these areas are not designated wilderness, they will be managed under old growth, riparian, and general forest standards and guidelines.

MA-F5. Research Natural Areas

Emphasis:

These tracts of land are areas where natural processes are maintained for research and education purposes. They will provide baselines against which other activities may be measured, sites for study of natural processes in undisturbed ecosystems, and gene pool preserves for both plant and animal species.

Desired Condition:

Natural conditions will be maintained. Any management activities within the RNA's will be directed at maintaining the natural conditions of the area, and these human-caused changes to the ecosystem will not be readily evident. Continuing, nondestructive baseline studies may be occasionally visible in terms of equipment, instruments, and related activities.

Fire occurrence will be evident where natural lightning and human-caused fire starts occur.

MA-F6. Old Growth

Emphasis:

Provide habitat for wildlife species dependent on old growth stands.

Desired Condition:

Stands of old growth are not expected to change significantly over the next ten to fifty years, barring natural catastrophe. They will continue to provide habitat for a number of wildlife species, such as the pileated woodpecker and Rocky Mountain elk, and may become more extensively used by these species as the majority of the Forest moves towards a "managed condition." High levels of snag habitat will continue as individual trees within the stands die of old age, as well as from periodic infestations by insect and disease populations. Management activities and roads will generally not be evident Fire occurrence will be evident where lightning and humancaused starts occur. Prescribed fire may be evident if natural fuels accumulate to dangerous levels, threatening the existence of the old growth stand, or where vegetation manipulation is needed to maintain stand structure and species composition. Grazing by livestock, as well as by big game wildlife species may be evident.

MA-F7. Summit National Historic Trail

Emphasis:

Protect the existing integrity of the Summit Trail Enhance and interpret significant segments for public enjoyment and education. Pristine segments will be managed to protect, interpret, and preserve their historic qualities.

Desired Condition:

The Summit Trail will be a place where Forest visitors can enjoy the cultural and recreational resources offered in a visually pleasing environment. The majority of the trail route is along developed roads and will provide travel by highway vehicle, as well as by mountain bike and horseback. Vegetation may appear manipulated in widely dispersed areas in order to enhance cultural and recreational resources, but will generally not dominate the landscape. Interpretive facilities such as signs and landmarks may be visible in special, culturally significant areas.

The outer boundary of the management area will generally not exceed 600 feet on either side of the trail.

MA-F8. Rock Creek/ Cottonwood Creek Roadless Area

Emphasis:

Provide for protection of soil, water, and fisheries, and for opportunities for nonmotorized recreational use and enjoyment. Maintain vegetation on steep slopes to prevent erosion and to protect water quality and the anadromous fishery.

Desired Condition:

Recreationists will see natural appearing areas free from motorized vehicle use. Recreational use, livestock grazing, prescribed fire and wildfire will occur, but the area will appear natural. These activities, along with any desired recreational improvements, will be the only visible impacts of direct human activities.

Riparian areas in less than desirable condition will show evidence of recovery from the application of mitigation and rehabilitation measures. Old growth stands will be evident within the Management Area, along with those wildlife species in the Ochoco National Forest which are dependent on old growth habitat. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat. Structures may be constructed, or other work may be done to maintain or improve habitat for the anadromous fishery. The area will remain one where there are above average numbers of trophy-sized elk and deer. Tree mortality, resulting from past spruce budworm infestations and other endemic insects and pathogens, will be evident along with associated changes in fuel loadings and plant succession. Fire occurrence will be evident where natural lightning and human-caused starts occur.

MA-F9. Rock Creek/ Cottonwood Creek Unroaded-Helicopter Area

Emphasis:

Allow timber harvest while protecting the anadromous fishery, sensitive soils on steep slopes, and big game habitat.

Desired Condition:

The area will be unroaded. Timber harvest and associated activities will use helicopter systems. The area will remain unroaded with landings located outside the management area. Prescribed fire use will also be evident in some areas where its use is desirable to attain management objectives. Visible harvest impacts will generally be limited to vegetation modification with little soil or other surface disturbance.

Recreation improvements, such as trailheads and access trails, will be evident where necessary to enhance access. Livestock use may be evident, but the successful application of allotment management requirements will show acceptable grazing practices. Riparian areas in less than desirable condition will show evidence of recovery from the application of mitigation and rehabilitation measures. Old growth stands will be evident within the Management Area, along with those wildlife species dependent on old growth habitat in the Ochoco National Forest. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat. Tree mortality, resulting from spruce budworm and other endemic insects and pathogens will be evident along with associated changes in fuel loadings and plant succession. Fire occurrence will be evident where natural lightning and human-caused starts occur.

MA-F10. Silver Creek Roadless Area

Emphasis:

Protect and enhance the roadless qualities and provide nonmotorized recreational use.

Desired Condition:

Recreationists will see natural appearing areas free from motorized vehicle use. Recreational use, livestock grazing, prescribed fire and wildfire will be evident over time. These activities, along with any desired recreational improvements, will be the only visible impacts of human activities within the Management Area.

Riparian areas in less than desirable condition will show evidence of recovery from the application of mitigation and rehabilitation measures. Old growth stands will be evident within the Management Area, along with those wildlife species dependent on old growth habitat on the Ochoco National Forest. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat. Tree mortality, resulting from past spruce budworm and other endemic insects and pathogens, will be evident, along with associated changes in fuel loadings and plant succession. Fire occurrence will be evident where lightning and humancaused starts occur.

MA-F11. Lookout Mountain Recreation Area

Emphasis:

Maintain a natural setting, providing continued opportunities for high quality, semiprimitive recreational activities and wildlife habitat, while maintaining healthy forests.

Desired Condition:

General

The Lookout Mountain Management Area will become a well-known area for year-round recreational activities and will provide excellent habitat for big game.

Prescription Area A:

This area will comprise approximately 7,550 acres of Forest land in a semiprimitive state with no vegetation manipulation planned. The recreational user will experience a highly diverse, natural landscape with interspersed stands of trees, openings, rock outcrops, and talus. A tree species mix including early successional species such as ponderosa pine, western larch and lodgepole pine will be seen across the lower elevations of the landscape. Lodgepole pine, sub-alpine fir, white fir and Douglas-fir will dominate at the higher elevations. Pockets of mixed conifer old growth will be an integral part of the vegetation mosaic. Natural tree mortality will be evident.

Big game habitat will be excellent due to the secluded nature of the area, high elevation moist meadows, and good year-round springs with heavy dense cover. Elk wallows will be numerous and big game use will be evident.

The area will be roadless, with currently existing roadbeds exhibiting evidence of rehabilitation activities and revegetation. Man-made improvements will be subordinate to the natural landscape and will be present to enhance recreational use of the area. Typical improvements apparent to the recreational user may include trails, trailheads, signing, trail shelters, livestock fencing, and possible wildlife habitat enhancement projects.

Prescription Area B:

This area will comprise about 8,110 acres in a relatively natural appearing condition.

A variety of trails, roads, trail shelters, signs and other improvements for the benefit of recreational users may exist, but will be designed and managed to be subordinate to the natural landscape. Several existing roads into the Management Area will remain open for motorized travel to dispersed campsites and mining activities.

Vegetation may appear manipulated in widely dispersed places in order to enhance recreational opportunities and wildlife habitat resources; vegetation manipulation will not dominate the landscape or generally be evident to the casual Forest visitor. Various vegetation manipulation techniques will be used to promote healthy forests which are more resistant to catastrophic events that may detract from big game habitat or a recreational experience. As a result of these limited entries, ponderosa pine and western larch, which are tree species valued for their appearance, will become more abundant over time. These species will be interspersed in a mosaic of other mixed conifer species of various size and age classes, including stands of old growth mixed conifer and ponderosa pine.

Minimum standard roads designed for specific projects will exist in low densities on the more gentle ground. Road use will be restricted to project activities and roads will be closed upon completion of each project. Roadbeds and banks will be seeded with mixtures of legumes and grasses to improve wildlife habitat. The amount of activity occurring at any one time will be limited.

MA-F12. Eagle Roosting Areas

Emphasis:

Provide winter roosting habitat for migrating bald eagles from December through April.

Desired Condition:

An uneven-aged stand will contain large trees which are at least 22 inches DBH, and a few trees which are

36-40 inches at DBH. Roost trees generally are at least 22 inches DBH and have an open structure which allows eagles to land easily. Those trees actively being used will be preserved along with replacement trees in the same vicinity.

The area will be free of potentially disturbing human activity during the period from December 1 to May 1. When actual or potential roosting areas overlap with areas which have more restrictive prescriptions, the area will be managed under the most restrictive prescription as long as roost trees are maintained.

MA-F13. Developed Recreation

Emphasis:

Provide safe, healthful, and aesthetic facilities for people to utilize, within a relatively natural outdoor setting, while pursuing a variety of recreational experiences.

Desired Condition:

This Management Area will consist of natural-appearing areas with obvious man-made controls and structures to direct users, provide for comfort and sanitation, and protect the natural resources. Developed sites will be provided for a broad range of recreational opportunities.

New and upgraded sites will incorporate a barrier-free design.

Management activities will not be visually evident. Scenic views may be enhanced through harvest or thinning but will appear natural.

Facilities, roads, and trails will have a well maintained appearance and provide a safe recreational environment. When vandalism is a problem, public use may be prohibited on a seasonal basis.

MA-F14. Dispersed Recreation

Emphasis:

Provide a near-natural setting for people to utilize while pursuing outdoor recreation experiences.

Desired Condition:

Within the immediate dispersed site, management activities will not be evident to the casual observer. Activities may be evident in areas adjacent to the site, depending on the management prescription applied to them. Primitive, user-constructed structures or facilities, consistent with a site's use, will be seen. Sites will be managed so that users tend to feel relatively isolated. A strategy will be developed that encourages individuals or groups to "find their own place."

Livestock grazing may be evident, but the successful application of allotment management requirements will also be evident.

MA-F15. Riparian

Emphasis:

Manage streamside vegetation and habitat in order to maintain or improve water quality and meet temperature and turbidity levels as required by state standards under the Clean Water Act (See Forestwide Standards and Guidelines, Water; and Best Management Practices (BMP'S), Appendix G).

Desired Condition:

Riparian areas will exhibit a low but apparent level of management. Vegetation may or may not appear manipulated, depending on the condition of the stream. An abundance of wildlife species should be evident. Due to management restrictions and the low risk associated with these areas, the signs of natural or man-caused fire will be infrequent.

For management purposes, a special protection area (100 feet from the edges of perennial bodies of water) will be apparent. In addition, the streams listed below will receive extra protection to 200 feet from the stream edge, in order to provide "connective habitat" for a variety of wildlife species on the Forest:

Trout Creek, Bear Creek, Drake Creek, Pine Creek, Allen Creek, Indian Creek, West Fork Bridge Creek, Porter Creek, Howard Creek, Fox Creek, Cottonwood Creek, Baldy Creek, Little Windy and Windy Creek, and Nicoll Creek

Roads not planned for future use will be obliterated and revegetated to a natural or near natural condition.

Within the limits of ecological potential, a shady, brushy condition with a canopy of alder, willow, aspen, or other deciduous vegetation will exist.

Where coniferous evergreens are a natural component of the ecosystem, a variety of size classes will exist to perpetuate the supply of shade and woody debris over time. Sites unable to support a canopy of deciduous or evergreen species will be characterized by vigorous stands of forbs, grasses, and grasslike riparian species.

Bank slopes containing high plant densities, thick root masses, embedded angular boulders, and old logs will also characterize these areas. Extensive scouring of streambanks will be an uncommon occurrence, as will soil deposition outside the norm for the individual stream system. Streambeds will be commonly covered by native aquatic growth on assorted sizes of rocks and boulders.

Where cobble and gravel bars are prominent, they will become covered by sandy loam soils as riparian vegetation filters and traps stream sediments. As stream banks are re-built and cutbanks stabilized, a narrower, deeper channel will gradually develop.

Springs and wet meadows are not specifically included in this management area prescription, but should receive appropriate protection as stated in Forest-wide Standards and Guidelines for Water, Chapters 4, Forest and Grassland Plans.

MA-F16. Bandit Springs Recreation Area

Emphasis:

Provide dispersed, nonmotorized recreational opportunities, within a setting where management activities are generally not evident to the casual observer. Expand the recreational activities and opportunities beyond winter recreation to year-round activities.

Desired Condition:

The Bandit Springs Recreation Area is expected to become an important winter sports use area on the Forest, as well as a setting for other year-round recreational activities, including environmental education, mountain bike riding, day hiking, hunting, and horseback riding. Developments to accommodate a broad spectrum of nonmotorized recreationists' needs will be built. Emphasis will be on enjoying the natural scenery, with interpretation aiding the casual visitor. Developments may include trail shelters, maintained trails, horse unloading ramps, toilets, information areas, parking, picnic areas, and signs.

Periodic manipulation of vegetation to meet recreation and visual objectives for the area will be apparent to the user. Timber stands will be managed to develop and maintain resistance to catastrophic events that would detract from the recreational experience. Both uneven- and even-aged silvicultural practices will be used A road system will be visible, but secondary to the natural setting. Livestock use will also be evident.

MA-F17. Stein's Pillar Recreation Area

Emphasis:

Maintain a scenic, natural or natural-appearing setting associated with unique geologic formations, particularly Stein's Pillar. Provide roadless nonmotorized recreation with opportunities to enjoy nature.

Desired Condition:

The area will be a natural or natural-appearing place with a variety of volcanic plugs, topography, plant communities, and wildlife, where recreationists can enjoy nonmotorized recreation.

Ponderosa pine stands will have large, yellow-bark trees, particularly along the Stein's Pıllar Trail. There will be a mosaic of these large-tree, open pine stands interspersed with juniper scab flats and fir stands. Created openings will blend with the natural appearance of the area. Scenic views will be created but management activities will not be evident to the casual observer.

The area will offer scenic views of Stein's Pillar and other volcanic plugs, as well as the Ochoco and Cascade Mountains. Recreationists will enjoy nonmotorized activities, including hiking, picnicking, rockclimbing, sightseeing, horseback riding, and group activities. These activities will mostly be day use.

Nonmotorized recreational opportunities and facilities will be provided. A rustic trail, designed and maintained for family day walks, will access Stein's Pillar. There will be an associated trailhead and access route. The trail system may be extended to the north to tie to the Benefield road. Also, a safe way to the base of the pillars will be constructed to allow easier access for climbers and others. Interpretive facilities will highlight geological, recreational, historical, old-growth, and wildlife features, and the nearby wilderness.

Streamsides will be extremely shady and brushy with an abundance of tall overstory conifer trees and/or shorter hardwoods of alder, willow, and aspen. Streamsides will meet the Riparian Management Area objectives.

Deer and elk may use the area for winter cover, feed, and security. Deer and elk may summer throughout the area. A 300-acre Old Growth Management Area will be available for wildlife, such as the goshawk and pileated woodpecker. Snags will occur naturally, providing habitat for woodpeckers, nuthatches, owls, and other cavity nesters

Livestock use will be evident, but the successful application of allotment management requirements will also be evident.

MA-F18. Hammer Creek Wildlife/Recreation Area

Emphasis:

Provide and maintain habitat diversity for a variety of wildlife species where open road density is minimal. Provide a scenic, semi-natural or natural-appearing setting for nonmotorized recreational opportunities.

Desired Condition:

Forested areas of ponderosa pine will be seen as a wide variety of size/age classes with a major component of large, yellow-barked pine. Mixed conifer areas will be a mosaic of open and closed canopy stands of various size classes to provide an optimum forage and cover mix for big game. Nonforested areas will generally appear natural in character, but with periodic evidence of livestock grazing. Riparian areas will be shady and consist of a mixture of trees and shrubs. Management activities will remain visually subordinate to the characteristic landscape.

Developed facilities such as trailheads, picnic/camp areas, and associated access routes will be evident on the periphery of the unit. Interpretive facilities will be available to highlight historical, recreational, and wildlife features.

Access roads to trailheads will be open. All other roads will be closed to motorized use and rehabilitated after management projects are completed.

MA-F19. Deep Creek Recreation Area

Emphasis:

Provide a near natural setting for recreational pursuits within the area.

Desired Condition:

Forested areas will contain large larch and ponderosa pine. Nonforested areas will generally appear natural in character with little immediate evidence of management activities. The riparian area will contain abundant alder and other riparian hard-wood species.

Dispersed recreational areas will be protected. Opportunities for camping in developed sites will be provided at Deep Creek Campground.

Trails may be developed that provide day hiking or interpretive recreational opportunities.

Management activities, including timber harvest and prescribed burning, will not be evident to the casual observer. Livestock use will be evident, but the successful application of allotment management requirements will also be evident.

MA-F20. Winter Range

Emphasis:

Manage for big game winter range habitat.

Desired Condition:

Big game use on winter range will be the primary activity, with other management activities and human intervention restricted from December 1 to May 1. Habitat effectiveness for big game will improve over time, due to increases in both quality and quantity of thermal cover, and to reductions in open road density. Road and trail use will be limited to one mile of open access per section, from December 1 to May 1, but up to three miles per section will be available during the remainder of the year.

Vegetation cover types, key species condition, big game use, and domestic livestock grazing will be inventoried and mapped. Treatment units will be identified and treatments prescribed on a scheduled basis to maintain key forage and browse species. Treatments will be monitored to assure appropriate forage and browse allocations for big game.

Management, including vegetation manipulation, structures, and prescribed fire to maintain or improve winter range, may be apparent. Livestock use of forage will be conducted in harmony with big game winter range habitat needs. Tree mortality, resulting from past spruce budworm and other endemic insects and pathogens, may be evident along with associated changes in fuel loadings and plant succession, in areas reserved for big game cover.

MA-F21. General Forest Winter Range

Emphasis:

Manage for timber production, with measures taken to maintain habitat effectiveness for big game. Design and implement management activities to recognize big game habitat needs.

Desired Condition:

Big game use on winter range will be the primary activity, with other management activities and human intervention restricted from December 1 to May 1. Habitat effectiveness will slowly decrease in this area, mainly due to future reductions in quality and quantity of thermal cover. This decrease will not be as rapid as in MA-22 General Forest, due to specified road closures and other incidental wildlife improvements. Road and trail use will be limited to one mile of open access per section during December 1 to May 1, but up to three miles per section will be available during the remainder of the year.

Fire occurrence will be visible where lightning and human-caused starts occur and where prescribed fire is applied.

Management activities will take into account vegetation types and successional responses in order to apply prescriptions which have beneficial results for habitat. Areas of particular importance as big game habitat will be identified and management activities modified to complement, protect, or improve habitat. Livestock use of forage will be conducted in harmony with big game winter range habitat needs

Tree mortality, resulting from past spruce budworm and other endemic insects and pathogens, may be evident along with associated changes in fuel loadings and plant succession, in areas reserved for big game cover.

MA-F22. General Forest

Emphasis:

Produce timber and forage while meeting the Forest-wide standards and guidelines for all resources. In ponderosa pine stands, management will emphasize production of high-value (quality) timber.

Desired Condition:

Most ponderosa pine stands and some mixed conifer stands on slopes less than 30 percent will exhibit the application of uneven-aged management. Trees up to 20 inches DBH will be seen in these stands, and the evidence of trees managed for high quality lumber (where the first log is relatively free of limbs) will be noted.

Most mixed conifer timber stands, most stands on slopes greater than 30 percent, and some pine stands not suitable for uneven-aged management will be seen as even-aged, with trees uniformly spaced and fully occupying the site, except in seedling and sapling stages. Regenerated stands will generally be 20 to 40 acres in size. A mix of species, with emphasis on the seral species such as pine and larch, will be evident where conditions permit. The largest trees will generally be 18 to 22 inches DBH, but larger ones may be found where left for snag replacements or other resource reasons. Trees will have full crowns and be relatively free of defect. Snags will be apparent over the area with potential snag habitat managed at the 20 percent level for Alternative B-Modified, and at the 40 percent level for Alternative L

A variety of native grasses, sedges and forbs will be available for grazing animals. Competition from nonforage species such as sagebrush and juniper will not be a major problem. Most of the forested range lands will be in fair and good forage condition class. Forage use will be apparent, and improvements installed to facilitate stock distribution and effective use of available forage will be evident.

Following use for timber haul, local access routes with planned future use will generally be open to high clearance access (maintenance level 2) for Forest visitor and administrative use, unless there are significant reasons to do otherwise. Access routes/ trails will be developed to offer a variety of terrain and experience levels for ATV's, and users will be restricted to these areas. Recreational off-road motorized use will be allowed, but users will be encouraged to use designated routes in order to protect Forest resources such as soils and water quality.

Dispersed sites will be scattered throughout the area. These sites will be maintained in as natural a condition as possible.

Fire occurrence will be visible where natural lightning or human-caused starts occur, and where prescribed fire was applied.

MA-F23. North Fork Crooked River Recreation Corridor

Emphasis:

Maintain the appearance of a natural landscape in the foreground view from Road 42. Protect and enhance public use and enjoyment of the river segment.

Desired Condition:

This segment of the North Fork of the Crooked River will be a free-flowing river whose shorelines may be accessible by roads. The immediate river environment (up to one-quarter mile from the river) will appear natural, though there may be evidence of past and ongoing timber harvest and grazing. Developed and dispersed campsites and interpretive signing will be seen throughout the area. The use of prescribed fire may be evident where used to enhance the retention of featured tree species such as old growth ponderosa pine or western larch.

MA-F24. North Fork Crooked River Scenic Corridor

Emphasis:

Maintain and enhance a natural appearing landscape to protect the "scenic river" designation.

Desired Condition:

This segment of the North Fork of the Crooked River will be seen as a free-flowing river whose shoreline is accessed by a road. The immediate river environment (up to one-quarter mile from the river) will have an overall natural appearance, though there may be evidence of past timber harvest. Other management activities will be evident, including dispersed campsites and interpretive signing A low standard trail will be developed that will require wading or rock-to-rock natural crossings. Prescribed burning will be apparent where used to enhance the retention of featured tree species such as large old growth ponderosa pine and western larch.

Several stands have been designated for old growth within the scenic river corridor. Where old growth restrictions are more restrictive than scenic river restrictions, the old growth prescriptions will apply.

MA-F25. U.S. Highway 26 Visual Corridor

Emphasis:

Maintain and enhance the scenery along U.S. Highway 26.

Desired Condition:

The U.S. Highway 26 Corridor will be managed to maintain the big tree appearance; activities will not be evident to the casual Forest visitor. Vegetation will be manipulated in order to provide a variety of size and age classes of timbered stands, including open parklike stands of old growth ponderosa pine, dense shaded stands of mixed conifer, and small openings with planted and natural tree seedlings. Both uneven- and even-aged stand conditions will exist. An established road system will be in place but will have been designed to minimize the visual effect on the landscape. Prescribed livestock grazing is planned. Pastoral scenes will add to visual variety. Prescriptive grazing will be designed to be in concert with the visual quality objectives of the area.

Wildlife may be viewed in the corridor. This might include big game and a variety of bird species. The effects of fire will be periodically evident, as a result of natural and prescribed burning.

Dispersed recreation sites will be abundant throughout the corridor. Camping will be encouraged, except where restricted for other resource reasons, such as streamside management areas along Mark's Creek. Snowparks for winter recreation will be constructed to blend into the surroundings.

MA-F26. Visual Management Corridors

(This includes all visual management areas outside of other special management areas, e.g. Highway 26, Summit Trail, etc.)

Emphasis:

Maintain the natural-appearing character of the Forest along major travel routes, where management activities are not evident, or are visually subordinate to the surrounding landscape.

Desired Condition:

Prescription Area A

This area will encompass about 86 miles of Forest roads and include approximately 9,300 acres of associated landscape. The outer boundary of the Management Area will generally not exceed 600 feet on each side the road. Retention will be the visual quality objective. Long-term management activities will not be visually evident to the casual observer.

Forest visitors will encounter a diverse landscape which reflects ecosystems where management activities appear as a natural condition. Vegetation will be manipulated, but will reflect a natural forest setting. Stands of trees will exist in multiple age classes, from young seedlings to mature old growth in both uneven- and even-aged conditions. Unique characteristics of the landscape, such as rock bluffs and aspen clones, will be highlighted, where they are currently hidden from view due to existing vegetation.

Prescription Area B

This area will encompass about 174 miles of Forest roads and include approximately 23,960 acres of associated landscape. The outer boundary of the management area will generally not exceed 600 feet on each side the road. Partial retention will be the visual quality objective. Long-term management activities may be evident but will be visually subordinant to the characteristic landscape. Forest visitors will encounter a near-natural scenic view, with a diverse ecosystem reflecting a low level of management.

Vegetation will appear manipulated. Stands of trees, in multiple age classes in both uneven- and evenaged conditions, will occur in a background of rock outcrops, aspen clones and native grass communities.

Prescription Areas A and B

An established road system will be in place, but will have been designed to minimize the visual effect on the landscape. Grazing by livestock may or may not be visible immediately adjacent to these roads.

As a consequence of visual management, an abundance of wildlife may be viewed in the corridor. This might include big game, a variety of bird species, and fish. The affects of fire will be periodically evident as a result of natural and prescribed burning.

MA-F27. Round Mountain National Recreation Trail

Emphasis:

Protect and manage for scenic qualities which make the trail corridor an attractive recreational setting. Rehabilitate trail sites where management activities conflict with National Recreation Trail objectives.

Desired Condition:

The visitor will note a naturally appearing forest along the majority of the trail route (visual quality objective of retention). The outer boundary of the management area will generally not exceed 600 feet on either side of the trail. The Round Mountain National Recreation Trail will be linked to trails on Lookout Mountain and the access road to the Summit of Round Mountain, as well as to Walton Lake Campground, through appropriate signing. Recreational improvements will be evident in those locations where necessary to protect the land, for public safety, and to enhance the public's enjoyment of the area.

Old growth stands will be seen within the management area. Fire occurrence will be evident where natural lightning and human-caused starts occur. Rehabilitation will be done in areas visually impacted by past management activity.

MA-F28. Facilities

Emphasis:

Provide a safe, efficient, and healthful working environment where structure design and layout of the site blend with the surroundings.

Desired Condition:

Sites will be efficiently designed work areas consistent with type and intensity of use. Employee wellness and public safety will be the primary design criteria. Color and design of structures and facilities will blend with the surrounding environment.

Traffic controls and signing will be designed to provide a safe driving environment. Roads and trails will be planned, designed, operated and maintained to levels sufficient to provide safe use for the intended traveler.

The historical significance of buildings and structures will be considered during any modifications to the site.

Employee residential areas will be designed to meet employee needs.

Management activities, such as timber harvest, thinnings, and fuel treatments for the protection of facilities from wildfire, may be apparent on a shortterm basis.

Grassland Management Areas

MA-G1. Antelope Winter Range

Emphasis:

Manage for optimum winter range conditions for antelope.

Desired Condition:

This Management Area will consist of generally open grassland with shrub heights at or below 24 inches, but not over 30 inches in height. Range improvements that facilitate antelope migration will be constructed. Harassment and stress on wildlife caused by motorized vehicle traffic will be reduced.

Fall greenup will be reserved for use by antelope during winter.

MA-G2. Metolius Deer Winter

Emphasis:

Manage for big game winter range habitat.

Desired Condition:

Management in this area will support the Oregon Department of Fish and Wildlife management objectives for the wintering deer population. A 60/40 forage/cover ratio, and a vigorous shrub overstory will be maintained. Private land will be acquired when possible. The implementation of seasonal road closures will reduce harassment and stress on wildlife from motorized traffic. Early season livestock grazing will be used as a vegetative management tool to maintain forage in a palatable condition. Fall greenup will be reserved for deer forage. A management plan for the entire winter range area will be developed in coordination with Oregon Department of Fish and Wildlife.

MA-G3. General Forage

Emphasis:

Manage for forage production and utilization in a manner consistent with general standards and guidelines for other resources.

Desired Condition:

Structural and nonstructural range improvements, prescribed fire to increase the palatability of desirable species, and livestock management will be used to maintain or increase for age production. The natural composition and cover values of native grasses, sedges, forbs and palatable shrubs will be retained. Competition from undesirable forage plants, such as sagebrush and juniper, that decrease range productivity will be reduced. Proper stocking levels and distribution will be employed to effectively utilize forage production without adversely affecting plant communities. Areas planted in crested wheat grass will proceed through natural succession to reestablish native plant species, unless specific resource management objectives can be better met by maintaining certain pastures in crested wheat grass. Aspen clones will be allowed to regenerate. The occurrence and increase of noxious weeds will be prevented. A variety of native and introduced grasses, sedges, and forbs will be provided for grazing animals. Improvements that facilitate stock distribution and the effective use of available forage will be installed.

MA-G4. Research Natural Areas

Emphasis:

These tracts of land are areas where natural processes are maintained for research purposes and education. They will provide baselines against which other activities may be measured, sites for study of natural processes in undisturbed ecosystems, and gene pool preserves for both plant and animal species.

Desired Condition:

Natural conditions will be maintained. Any management activities within the RNA's will be directed at maintaining the natural conditions of the area, and these human-caused changes to the ecosystem will not be readily evident. Continuing, nondestructive baseline studies may be occasionally visible in terms of equipment, instruments, and related activities.

Fire occurrence will be evident where natural lightning and human-caused fire starts occur.

If available, the private land on Haystack Butte RNA will be acquired.

MA-G5. Juniper Old Growth

Emphasis:

Provide habitat for wildlife species dependent on old growth stands.

Desired Condition:

The common flicker is the management indicator species. Stands at least 40 acres in size and not more than five miles apart will be maintained. Trees should be large with hollow centers and have broad, irregular-shaped crowns or spike tops. Most of the large trees, both live and dead, should support lichen growth. Cavities should be evident in the trees from either bole splits and/or limbs that have broken away from the tree bole. Some younger trees may be present along with various grasses, forbs, and shrubs. Management activities and roads will generally not be evident. Fire occurrence will be evident where lightning and human-caused starts occur. Grazing by livestock, as well as by big game wildlife species, may be evident.

MA-G6. Crooked River Recreation Area

Emphasis:

Maintain the appearance of a natural landscape to enhance and protect recreational values.

Desired Condition:

The natural and scenic qualities of the river corridor will be preserved, as required by the Wild and Scenic Rivers Act.

A trail system and dispersed campsites will be developed to assist in public enjoyment of the area.

MA-G7. Deschutes River Scenic Corridor

Emphasis:

Manage for scenic quality and natural appearance of the landscape.

Desired Condition:

The natural and scenic qualities of the river corridor will be preserved as required by the Wild and Scenic Rivers Act. A trail system will be developed to provide access to the area. Dispersed campsites will be designated to aid in management of the area.

MA-G8. Squaw Creek

Emphasis:

Provide opportunities for semiprimitive nonmotorized recreation in a pristine canyon setting while protect ing and enhancing the deer winter range habitat fisheries. A 1,370-acre corridor along the creek will be managed for its scenic quality as a "scenic river."

Desired Condition

A travel management program will restrict vehicle access seasonally, except for administrative and special uses. Private inholdings which facilitate management of the area will be acquired when possible. Recreational use, livestock grazing, prescribed fire and wildfire will occur, but the area will appear natural. Wildlife and fish species indigenous to the area will continue to exist at levels consistent with the available habitat. Fire occurrence will be evident where lightning and human-caused starts occur.

A corridor along the creek from the Grassland boundary to the confluence with the Deshutes River has been determined to be suitable for designation as a scenic river under the Wild and Scenic Rivers Act.¹ This corridor will be managed to preserve and, or enhance its natural and scenic qualities.

MA-G9. Riparian

Emphasis:

Maintain riparian habitat, including streambank stability and fish habitat capability, at existing levels where the desired condition is met. On sites where the desired condition is not met, take steps necessary to bring riparian condition to its ecological potential. Allow no activities that will result in a deterioration of water quality in perennial and fish bearing streams.

Desired Condition:

General: On-the-ground work and management changes are needed to improve riparian conditions on approximately 1,250 acres of the Grassland, all but 400 acres have been completed. Remaining work will be completed in the first decade. However,

) to 60 years for some of these nction fully as natural systems.

ities include fencing, seeding, tion of physical structures such ck dams, and log weirs. Changes in livestock management are an important part of this strategy. Range allotment plans will reflect forage utilization levels necessary to meet brush and hardwood protection or enhancement needs.

Specific projects are shown in the Riparian Improvement Schedule in Appendix A.

Work to restore riparian areas will have been completed, but not all riparian areas will have had time to recover to full biological potential. Many streams that presently flow only seasonally will flow yearround. The potential for overland flows and delivery of sediment to streams from upland areas will have been reduced by construction of improvements such as fences, the development of dispersed water sources, and adjustments in grazing systems. Water quality will be maintained or improved to meet state standards for temperature and turbidity.

Stream Channels: Establish a shady, brushy condition with a canopy of alder, willow, aspen, or other deciduous vegetation. Sites unable to support a canopy of deciduous species will be characterized by vigorous stands of forbs, grasses, and grasslike riparian species. Although cobble and gravel are often prominent features during the development of riparian stream courses, they become covered by sandy loam soils as riparian vegetation filters and traps stream sediments. As stream banks are rebuilt and stabilized, a narrower, deeper channel will gradually develop.

Springs: Manage springs to maximize water storage and support excellent condition riparian vegetation. These ecosystems should support deciduous vegetation where such vegetation was present in the past At spring sites not associated with deciduous vegetation manage the riparian area to support vegetation associated with excellent condition. These spring areas will not show signs of compaction, channeling, or head cuts.

Wet Meadows: Manage wet meadows to support vegetation associated with excellent conditions such as forbs, grasses, reeds, sedges, and rushes. These areas will not show signs of channeling or gully development of sufficient size to lower the seasonally saturated zone and change the plant community

Instrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, the President of the United States Congress has reserved the authority to make final decisions on designation of rivers and Scenic Rivers System

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type. These zones should be showing no signs of invasion from nonriparian species such as rabbitbrush, sagebrush, or juniper.

MA-G10. Rimrock Springs Wildlife Area

Emphasis:

Provide unique habitat (wetlands, ponds, springs) within the juniper-sagebrush steppe. Provide for nonconsumptive (viewing, photography) wildlife uses in a natural setting. Improve present habitat conditions and promote habitat diversity.

Desired Condition:

Increased opportunities for wildlife viewing and photography, including a barrier-free interpretive trail and a brochure will be provided Barrier-free toilet facilities will be available at the trailhead. Interpretation of unique cultural resources will preserve early history of the area. Prescribed fire will be used to improve habitat.

MA-G11. Haystack Reservoir

Emphasis:

Provide users with a system of quality facilities that are safe and environmentally sound. Continue to emphasize camping, picnicking, boating, fishing, and swimming.

Desired Condition:

The existing partnerships will be continued and new ones explored to provide for the needs of the recreational users. Bureau of Reclamation (BOR) lands around the reservoir will be acquired to simplify management of the area; BOR would retain ownership and management of the dam. New and upgraded facilities will provide for barrier-free opportunities.

MA-G12. Cove Palisades State Park

Emphasis:

Manage for developed campgrounds and water related recreational activities.

Desired Condition:

The landbase needed by the State to operate a highquality developed recreational facility on the shores of Lake Billy Chinook will be provided. Other resources within the park boundary will be managed to support this goal.

MA-G13. Lake Billy Chinook View Area

Emphasis:

Maintain the natural appearing character of the viewshed from Lake Billy Chinook, where management activities are not evident or are visually subordinated to the surrounding landscape.

Desired Condition:

The natural and scenic qualities of the management area will be preserved.

MA-G14. Dispersed Recreation

Emphasis:

Provide and maintain a near-natural setting for outdoor recreational experiences.

Desired Condition:

Within the immediate dispersed site, management activities will not be evident to the casual observer. Activities may be evident in areas adjacent to the site, depending on the management prescription applied to them. Primitive, user-constructed structures or facilities, consistent with the sites' use, will be seen. Sites will be managed so that users tend to feel relatively isolated. A strategy will be developed that encourages individuals or groups to "find their own place." Livestock grazing may be evident, but the successful application of allotment management requirements will also be evident.

MA-G15. Gray Butte Electronic Site

Emphasis:

Manage the site to provide low power output electronic equipment. Limit transmitters to a maximum of 150 watts.

Desired Condition:

All development should meet partial retention from important viewpoints. Minimize interference potential through facility design, location, spacing, capacity and establishment of site-noise floor limits. Meet user needs, and maximize utilization of the site. Three buildings and three towers will be allowed at the site.

MA-G16. Utility Corridors

Emphasis:

Accommodate energy-transmission facilities.

Desired Condition:

Future development will be confined to existing corridors. No windows for future development will be designated Identify exclusion and avoidance areas. Through design and management, the use of lands allocated to power facilities will be optimized. The proliferation of separate rights-of-way will be discouraged to reduce the cumulative environmental impact of linear facilities. The creation of corridors in addition to those currently designated will be discouraged.

Interalternative Comparison of Resource Outputs, Environmental Effects, Activities, and Costs

By comparing the alternatives' response to issues and concerns (Table 2-9), and to outputs and effects (Table 2-8), a relationship between issues and environmental effects may be seen.

Many outputs and effects have been derived from the FORPLAN model described in Appendix B. Other environmental effects are discussed in Chapter 4. The glossary provides definitions and explanations of abbreviations and units of measure.

Economic Values and Responses to Major Issues, Concerns, and Resource Use and Development Opportunities

This section defines indicators that are used to show differences in how alternatives respond to the Issues, Concerns and Opportunities (ICO's). It also discusses indicators that are of central concern to the nation as a whole. Appendix A fully discusses each of these ICO's and the relevance of the response indicators. The ICO's with the greatest influence on the alternatives and their associated response indicators follow.

1. Timber Supply and Forest Management:

allowable sale quantity in cubic feet, first and fifth decade;

allowable sale quantity in board feet, first decade;

average annual salvage;

unevenage management acres.

2. Social and Economic Wants and Needs of Local Communities:

Present Net Value (PNV);

number of Forest-dependent jobs,

payments to counties.

3. Livestock Grazing and Allotment Management:

Permitted Livestock Use in AUM's, first and fifth decades.

4. Riparian Area Management:

acres of riparian area in excellent condition, first and fifth decades.

5. Transportation System:

miles of primary road, end of first decade.

6. Big Game Habitat:

potential deer population, fifth decade;

potential elk population, first and fifth decades.

7. Roadless Areas and Wilderness Study Areas: acres allocated to roadless recreation.

8. Scenic or Visual Resources:

acres allocated with scenic resource emphasis.

9. Old Growth:

acres allocated/dedicated to old growth emphasis.

10. Fuelwood Supply:

annual firewood supply in M acres, first and fifth decades.

11. Snag Dependent Wildlife:

average percent of potential cavity nester habitat, first and fifth decades.

12. Winter Sports:

areas available for winter recreation pursuits.

13. Anadromous Fish:

production of Steelhead smolt (smolt /meter sq.), first and fifth decade.

14. Historic Trail Preservation:

acres allocated for Summit Historic Trail.

15. Off Road Vehicle (ORV) Use:

miles of ATV trail, first and fifth decades.

16. Round Mountain:

area with recreation and scenic resource emphasis, planning period.

Interalternative Comparisons and Major Trade-offs

Introduction

This section summarizes relationships between economic values and the responses of the alternatives to the issues, concerns, and opportunities (ICO's). The purpose is to identify economic and noneconomic comparisons and trade-offs that can be quantified as ICO response indicators. To provide a partial framework for assessing comparisons and tradeoffs, the long-term resource demands of the national, regional, and local communities have been 1

TABLE 2-9
INDICATORS OF RESPONSIVENESS OF ALTERNATIVES TO
ISSUES, CONCERNS, AND OPPORTUNITIES

			ALTERNATIVE						
Resource Output or Item	Unit of Measure	NC	B-MOD	E DEP	I-Preferred	A	C-MOD		
Allowable Sale Quantity (ASQ) 1st Decade 5th Decade 1st Decade	MMCF MMCF MMBF	N/A N/A N/A	21 8 21 8 130 0	20 6 16 1 123 0	190 190 1150	193 193 1150	15 6 15 6 94 0		
Average Annual Salvage	MMBF		8	15	7	14	6		
Uneven-Age Mgmt	M Acres	0	120	0	100	0	170		
PNV	Million \$	380	452	471	475	421	395		
Estimated County Receipts	M \$'s	Un- known	45	51	49	43	35		
Estimated Change in Jobs	#	Un- known	176	196	118	57	-101		
Livestock Use 1st Decade 5th Decade	M AUM's/Yr	77 5 77 5	70 0 80 0	79 0 79 4	70 0 80 0	77 5 79 1	73 1 74 4		
Riparian Areas in Excellent Condition 1st Decade 5th Decade	M Acres M Acres	54	10 0 17 5	 9 4	10 0 17 5	 5 4	10 0 17 5		
Miles of Primary Road Open and Maintained -End of Planning Period	#Miles	4774	4800	4776	4734	4774	4743		
Miles of Roads Closed 1st Decade 5th Decade	#Miles	694 1734	913 2123	890 2082	1558 2185	694 1734	1520 3224		
Deer Population 5th Decade	#	Un- known	17,210	22,600	22,600	22,600	22,600		
Elk Population 1st Decade 5th Decade	#	Un- known	3210 1700	3170 2780	3000 2620	3370 2690	3740 3700		
Acres Allocated-Unroaded 1/	M Acres	29 1	10 7	27 3	38 4	31 2	41 0		

Resource Output or Item	Unit of Measure	NC	B-MOD	E DEP	I-Preferred	A	C-MOD
Scenic Resources Preservation Retention Partial Retention Allocated 2/	M Acres M Acres M Acres 71 4 M Acres	38 3 102 2 28 1	39 5 60 7 59 4 34 4	43 3 70 7 32 4 46 2	42 0 96 8 71 4 41 7	38 3 102 2 61 5 83 5	50 9 155 6 101 1
Old Growth (Allocated) 3/	M Acres 32,860		18,740	26,340	19,996	36,970	45,030
Fuelwood Supply 1st Decade	M Cords	14 0	15 0	13 1	13 0	14 0	12 0
Snag Habitat for Cavity Nesters 1st Decade 5th Decade	% of Po- tential	Un- known Un- known	43 33	46 55	47 54	46 52	51 69
Area Aliocated To Recre- ation Emphasis 4/	Acres		28,630	35,065	58,120	31,950	48,710
Anadromous Steelhead 1st Decade 5th Decade	SHCI 5/ (M Smolt)	121 220	121 220	121 220	121 220	121 220	121 220
Total Miles of ATV Trails 1st Decade 5th Decade	#Miles	None None	95 190	0	95 190	0 0	95 190
Round Mountain Recreation Emphasis 6/	Acres	N/A	1,000	0	1,000	0	0

1/ Total acreage for lands allocated to management areas with unroaded recreation emphasis (D9, F8, F10, F11, G8)

2/ Total acreage for lands allocated to management areas with visual resource emphasis (D5, D6, D7, G13, F25, F26, F27)

3/ Total acreage for lands allocated to management areas with old growth emphasis (D4, F6, G5)

4/ Total acreage for lands allocated to management areas with recreation emphasis (D9, D10, D11, F7, F8, F10, F11, F13, F14, F16, F17, F19, G8, G11, G12, G14)

5/ SHCI: Steelhead Habitat Capability Index, thousands of smolt

6/ Acres on Round Mountain with recreation emphasis (applies to Round Mountain National Recreation Trail)

summarized. Selected economic values and quantified indicators of responsiveness to ICO's are tabulated (Table 2-9). Finally, differences and similaritues among individual alternatives are summarized in terms of major trade-offs among competing objectives or responses to expressed issues, management concerns, or resource use and development opportunities. A complete understanding of differences among alternatives requires reading all of Chapters 2 and 4.

National, Regional, and Local Overview

National projections predict demands will rise for all outputs from National Forests (RPA). At the same time, there is also strong demand to protect and enhance environmental quality. Demands and prices for commodity production are generally determined in national and regional markets. Demand for timber from this Forest is high. Most timber sales are competitively bid to prices significantly higher than appraised prices. When national and regional markets are strong, prices are frequently bid upwards of \$200 per thousand board feet for ponderosa pine. Demand for livestock forage is also high since the Forest and Grassland are the primary sources of summer forage in this area. All allotments are currently grazed, and the desire to utilize additional forage, or take over any unused allotments, is always high.

Demands for outdoor recreation uses are essentially local or regional. Recreationists on this Forest are predominantly local. The main exceptions are the fall hunting seasons which draw hunters from more populated areas of the state. Total recreational use of the Forest is predicted to rise about 59 percent in the next 50 years (see Tables 3-14 & 3-15, FEIS, Chapter 3).

Forestry Program for Oregon (FPFO)

The Oregon Department of Forestry has devel-

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oped, in conjunction with the State Board of Forestry, the "Forestry Program for Oregon." The objectives for this program as they relate to the Ochoco National Forest are discussed in detail in Chapter 4 of this FEIS. The preferred alternative (Alternative I) and Alternatives B-Modified, A and E-Departure would all meet the FPFO objectives for the planning period. Chapter 4 of this FEIS discusses the FPFO in more detail.

Summary of Environmental Consequences

Effects on Resources that Vary by Alternative

Oregon State Air Quality Implemtentation Plan

The current Forest and Grassland prescribed fire program is producing 10 to 20 tons/year of total suspended particulates (TSP). This amount varies by alternative. Fugitive dust from construction activities and traffic also occurs.

Cultural Resources

Cultural and archaeological sites will be protected in all alternatives. However, the possibility of damage, vandalism, and discovery of sites will be greater in alternatives that emphasize commodity resources.

Developed Recreation

The Forest maintains 30 developed recreation sites; 96 miles of trail, 15.8 miles of which are designated "National Recreation Trail"; and seven small reservoirs. Alternatives consider the development of additional recreational facilities, including trails, campgrounds and impoundments. The associated recreational activities can result in environmental effects of a local nature, such as vegetation loss, soil compaction, erosion, and conflicts with other resources, such as wildlife, timber harvest activities and grazing of livestock.

Dispersed Recreation

Over 445,000 visitor days of use are received annually, and recreational use continues to increase. This

amount of dispersed recreational use calls for controls on off-road vehicle use to prevent noise pollution, and damage to soil, vegetation, and aesthetics. It also calls for road closures to maintain habitat security for wildlife, to prevent damage to road surfaces, and to prevent conflicts with other resource management activities such as log hauling. The alternatives affect the amount of unroaded area available for semiprimitive and other dispersed recreational activities.

Energy Conservation

Activities on the Forest and Grassland which generally have a positive net energy balance are firewood harvesting and forage production. Generally, all other activities consume more energy than they produce. The average range that energy consumption from planned National Forest activities exceeds energy yields has been estimated to be in the magnitude of three to five billion BTU's per decade.

Fire and Fuels

There are an average 108 wildfire ignitions per year. Prescribed fire is being increasingly used as a management tool. Approximately 15 to 20 thousand acres of slash are treated with prescribed fire annually. Use of fire in management can have effects on soil erosion, short-term appearances, air quality, vegetation productivity, plant community, species composition, and fuels.

Floodplains and Wetlands

Considerations for floodplain management as required by EO 11988, and protection of wetlands, EO 11990, are incorporated into all alternatives.

Human Resource Programs and Civil Rights

The Forest and Grassland will continue to participate in these programs in accordance with laws, administrative opportunities, and economic availability of programs. Minorities and economically disadvantaged groups will not be adversely affected by any of the alternatives.

Landscape Appearance

Emphasis on maintaining scenic quality within road

corridors varies by alternative. Significant effects on landscape appearance are related to timber harvest practices; dispersion of cutting units; protection and management of riparian areas; and road location, design, and densities, all of which are related to direction in the management prescriptions in Chapters 4 of the Plans.

Livestock Grazing

Livestock grazing is maintained at nearly current levels for most alternatives considered. Livestock grazing activities, if not carefully managed, can cause soil compaction, impact streamside vegetation, affect water quality of stream habitat for fisheries, compete with wildlife, affect plant community composition and productivity over time, and alter the appearance of natural settings. Water developments and salt intended for livestock also benefit wildlife.

Minerals

There is little real difference in the effects on mineral production or mineral leasing between alternatives. The effects on mining operations and minerals leasing would be reflected in operation plans and lease stipulations, for example, alternatives proposing unroaded area management and research natural areas could result in attachment of no occupancy stipulations to specific leases. Mineral leasing provides returns to local governments in terms of receipts.

Old Growth Habitat

Old growth habitat is identified for protection and management for purposes of wildlife habitat and genetic diversity. The amount and dispersion varies by alternative. Protection of old growth habitat results in reduced timber harvest levels.

Prime Farmlands, Forestlands, and Rangelands

All the alternatives propose actions which are consistent with the intent of the Secretary of Agriculture direction for protecting and managing prime lands.

Research Natural Areas

Research Natural Areas (RNA's) preserve places

for the purpose of research and maintaining genetic diversity. The maximum increase in area proposed for RNA's is 2,630 acres. The designation and protection of RNA's can affect timber harvest level, mineral leasing, road system development and grazing activities. Because of the small acreage involved, these consequences are minimal regardless of alternative.

Riparian

Approximately 800 miles of streamside area, plus wet meadows and lake shores, have been identified on the Forest as riparian area. While only an estimated two percent of the total Forest and Grassland area is considered riparian it receives the most intensive and concentrated use of any land area More than 50 percent of the recreational use occurs there; transportation corridors are located along stream bottoms, grazing in the past has been intense; important wildlife habitats are found there, streamside areas provide productive timber sites; and fisheries habitat is dependent, in part, on the condition of streamside vegetation. Nearly all Forest activities have either direct or indirect effects on riparian areas and water quality. Protection and restoration of riparian areas can impact other activities over the short term.

Roads and Off-Road Vehicles

Over 4,550 miles of roads have been constructed on the Forest and Grassland. Management and maintenance of this transportation system requires closures and restrictions at times to protect road surfaces, other resources, and public safety. Travel planning for on-road and off-road vehicle use has placed more restrictions on vehicles and motorized use of the Forest and Grassland in order to protect resources.

Social and Economic

The Forest and Grassland directly influences a six county area which contains a population of about 110,000. Socio-economic consequences are related to economic stability of communities, livelihoods in terms of numbers and types of jobs, local government revenues, lifestyles, and community cohesion. Alternatives favoring timber and other commodity uses tend to impact livelihoods and lifestyles dependent on amenity values, and vice versa. On this Forest, the production of net cash returns to the U.S. Treasury, levels of employment, and payments to counties are directly dependent upon the level of timber production. These benefits are less under alternatives that place more emphasis on nontimber issues, such as those associated with wilderness and roadless areas, high levels of scenic quality, and vegetative diversity. The benefits associated with minerals are similar for all alternatives.

Threatened and Endangered Species

The only Federally listed species observed on the Forest and Grassland are the peregrine falcon and bald eagle. Neither is a known permanent resident. All Federal and State listed species are protected in all alternatives as provided for in the standards and guidelines in Chapters 4 of the Forest and Grassland Plans or Appendix D of this FEIS.

Formal consultation with the Fish and Wildlife Service (FWS) was initiated through request by the Forest Service in October 1986. The resultant FWS consultation addressed the possible effects of selecting Alternative E-Departure in the DEIS. The consultation was limited to the bald eagle and the peregrine falcon, both federally classified as endangered. The biological opinion of the FWS is that the implementation of Alternative E-Departure in the DEIS would not likely jeopardize the continued existence of the bald eagle and peregrine falcon.

There has been continued informal consultation between the Ochoco National Forest and the FWS since the DEIS. The FEIS incorporates a number of changes that have resulted from both the formal and informal consultation. Among them are the allocation of 570 acres to an Eagle Roosting Management Area (MA-F12) for all the alternatives, specific monitoring requirements for threatened and endangered species and direction to develop site specific management plans for the roosting sites during implementation of the Forest and Grassland Plans.

Timber Management

Timber production and associated management and cultural activities has the greatest influence locally

on jobs and economics of any resource on the Forest. An array of alternatives ranging from 15.6 million cubic feet production per year to 218 million cubic feet is examined in the environmental impact statement. The alternatives considered emphasize utilization of appropriate silvicultural systems which may be either even- or uneven-aged depending on field conditions and objectives. Timber management and associated activities such as road construction, reforestation, thinning, harvest, slash disposal, and various site treatments have a wide variety of effects on other resources, particularly soil, water, air, wildlife, fisheries, landscape, recreational experiences, and socio-economics. Practices and management requirements are applied that minimize adverse effects.

Toxic and Hazardous Materials

Activities that may occur on the Forest and Grassland involving the use or disposal of hazardous or toxic materials are required to meet all State and Federal laws and provisions. Therefore, provisions and procedures for dealing with any of these materials are the same for all alternatives.

Unroaded Areas

The areas remaining that have not been designated as wilderness or Wild and Scenic Rivers, totaling 52,880 acres, are treated in the alternatives. The range of alternatives provides for varying degrees of development, or retention of roadless characteristics for semiprimitive recreation.

The most significant conflict of maintaining unroaded areas is with timber production. Approximately 38,430 acres will be managed in an unroaded condition for semiprimitive recreation under the preferred alternative.

Utility and Transportation Corridors

All alternatives recognize State and County road corridors. Utility corridors are also recognized and no alternatives result in any conflict with movement of power or energy throughout the area.

Wild and Scenic Rivers

An inventory conducted by the National Park Service under Public Law 88-29 and Public Law 90-252 identified segments of the Deschutes, Crooked River, and North Fork Crooked River for study and potential classification under the Wild and Scenic Rivers Act. The Oregon Rivers Act of 1988 classified segments of these rivers. All alternatives provide for the protection of the rivers until required planning for their management is complete.

Eligibility and suitability determinations have been made for a portion of the Squaw Creek area. A 7.5 mile segment of the creek, 1,370 acres, from the Grassland boundary to the confluence with the Deschutes River would be managed as a "scenic river." In addition, it would be recommended for inclusion into the Wild and Scenic Rivers System. This would be a preliminary recommendation that would receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. Congress has reserved the authority to make final decisions on designations of rivers as part of the National Wild and Scenic Rivers System.

Wilderness Establishment

Three wilderness areas totaling 36,200 acres were established under the Oregon Wilderness Act of 1984 on the Ochoco National Forest. A range of options was considered for the Deschutes-Steelhead Falls area which the Oregon Wilderness Act identified for further study. No wilderness is being recommended. A 7840 acre semiprimitive nonmotorized management area is being established which involves part of the WSA, some of the remaining portion is included in the classified Deschutes Scenic River. North Fork Crooked River area is addressed in a separate study by the BLM. The BLM recommended no wilderness in their draft EIS for this area.

Wildlife

Important game species habitat, namely deer and elk, is afforded some degree of protection in all alternatives, but its management is emphasized in certain ones. Snag and old growth forest habitat is provided at varying levels throughout a range of alternatives. Fish habitat protection is related to those alternatives emphasizing management of riparian areas. Management activities and uses on the Forest and Grassland directly and indirectly affect wildlife and fisheries habitat. Road construction, timber harvest, timber cultural practices, livestock grazing, recreational uses, prescribed fire, and firewood cutting are common activities on the Forest and Grassland which can affect wildlife and fisheries habitat. Alternatives, management requirements, standards and guidelines, and project design all incorporate means to minimize impacts on wildlife and their habitat.

Probable Adverse Environmental Effects that Cannot be Avoided

- Soil displacement or erosion can be expected 1. to result from planned management activities, such as vegetation removal, slash disposal, log skidding, prescribed fire, construction and maintenance of roads, trails, transmission facilities, recreation sites and others. Soil productivity would be maintained except for sites dedicated to roads, skid trails, log landings, recreation sites, and other facilities or uses that may compact the soil, alter the soil profile, or deplete nutrients. An estimated one percent of the Forest and Grassland area would be occupied by roads or facilities. Experience has shown that temporary road surfaces can be re-vegetated, but the productivity is reduced. Forest-wide, an estimated 10 percent of cable-logged areas and 30 percent of tractor logged areas would experience increases in soil bulk densities or compaction. These factors, in turn, have indirect effects relating to reduced wildlife habitat, vegetation productivity, occurrence and spread of noxious weeds, and increases in stream sedimentation.
- 2. Prescribed fire use may be expected to contribute to total suspended particulates (TSP) in the atmosphere, to periodic increases in haze, and reduced visibility.
- 3. The natural appearance of the landscape and forest would change over time, with the natural and characteristic features as they exist today giving way to more domination in places by management activities and results of management.
- 4. Forest vegetation would be altered in respect

to species composition, stand structure, and age. Existing mature forest "suitable" lands would be subject to management treatments. Where feasible, mixed conifer stands would be replaced with currently more economically or silviculturally desirable species (primarily ponderosa pine). Other management treatments include overstory removal of old growth ponderosa pine from multistoried stands, resulting in a reduction in basal area, and removal of less desirable species within densely forested areas by thinnings. Intensively managed or regulated forests may provide less habitat for species dependent on old growth forest, snags and down material, and provide less scenic settings, species diversity, and habitat diversity.

- 5. Average size of trees that are harvested would change over time to smaller material as old growth and existing mature forest is converted to younger stands. This would have an affect on types of harvest equipment and wood processing, and machinery and manufacturing requirements; and likely will bring a shift towards cubic feet management rather than board feet.
- 6. Approximately 93,110 acres on the Forest and Grassland remain roadless. With the exception of 36,200 acres designated as wilderness, 4,030 acres designated as wild and scenic rivers, and 52,880 acres remaining available, opportunities for semiprimitive recreation may decrease over time.
- 7. Increased road densities, improvement in access, subsequent increases in human presence, and continuing expansion of management activities can result in reduction of wildlife habitat security, harassment of wildlife, increased road kills, physiological stress in wildlife species resulting in altered behavior and productivity, and changes in hunter attitudes and experiences over time. The preferred alternative provides for road management closures and restrictions which would reduce open road density over the next five decades.

- 8. Actions to improve riparian conditions may result in increased costs to grazing management, e.g., installation of improvements (fencing and water developments), herding, transport to control stock distribution and use, and possible temporary reductions in animal unit months.
- 9. Current procedures cannot insure that all cultural resource sites will be located. Some sites could be inadvertently destroyed or damaged. Such impacts are unavoidable pending advances in inventory techniques
- 10. Forest users could encounter more controls and restrictions over time as management intensity, resource competition, and human populations increase.

Short-term Uses of the Environment and Maintenance of Long-term Productivity

From a perspective that each generation is trustee of the environment for succeeding generations, an objective of the Plans is to provide for the proper and continued development of resources in a manner that maintains economic viability, yet maintains local natural heritages, such as, wildlife habitat, outdoor recreation opportunities, water quality, scenic qualities, and livestock grazing. The preferred alternative emphasizes a balanced mix of uses and intensive commodity (timber, range) production on suitable places in order to help provide economic stability, but also attempts to provide for the protection of other resources (soil, water, wildlife habitat, aesthetics).

While the Plans involve harvest of mature timber, sustaining or improving long-term productivity is planned for through intensive forest management practices (e.g. reforestation and thinnings). This may result in future utilization of smaller trees to maintain harvest levels over time. Lands were identified as "unsuitable" for sustained yield timber management due to regeneration difficulties. Dispersion of timber harvest activity, retention of old growth, and protection of riparian areas and big game habitat have all been planned to prevent impairment of long-term land and resource productivity.

Construction of roads, mechanical slash piling, and log skidding are short-term uses that can reduce long-term vegetation productivity.

Increases in road densities, improvement in access, subsequent increases in human presence, and continuing management activities have the potential in the near future to create effects that will affect longterm productivity of wildlife habitats, aquatic systems, and local socio-economic aspects.

Irreversible or Irretrievable Commitment of Resources

This plan deals with both developed and undeveloped or roadless lands. Lands where road systems, plantations, thinnings, and structures are established represent a type of economic commitment that commits the land to those activities. These investments represent "sunk funds" from an economic standpoint and are not retrievable, nor do they necessarily have any "liquidity," over the planning period.

The specific acres, estimated to be one percent of the total Forest and Grassland area, upon which roads and facilities are constructed represent a loss of soil/vegetation productivity and unaltered landscape.

Use of rock for road surfacing and construction purposes, estimated to be 200,000 tons annually on the Forest and Grassland, is an irreversible and irretrievable commitment of a resource, but is not considered critical because of the abundance of good quality rock in this locale.

Undeveloped and roadless areas once allocated for development will, within a relatively short time, become irretrievably unsuited for wilderness classification. In the case of lands already intensively developed by roading, a high degree of irreversibility exists; whereas, in the case of undeveloped lands, frequently a wide range of management options exists.

Dasmann, et. al., in *Ecological Principles for Eco*nomic Development, 1973 (pp 22-23), recognized six broad development levels for lands, each representing progressively greater commitment of resources. The development levels are:

- 1. The land can be left in a completely natural state and reserved for scientific study, educational use, wilderness, watershed protection, and its contribution to landscape stability.
- 2. It can be used as a park, refuge, or reserve with the natural scene remaining largely undisturbed to serve as a setting for outdoor recreation and an attraction to tourism.
- 3. It can be used for limited harvest of its wild vegetation or animal life, but maintained for the most part in a wild state - serving to maintain landscape stability, support certain kinds of scientific or educational uses, provide for some recreation and tourism, and yield certain commodities from its wild populations.
- 4. It can be used for more intensive utilization of its wild products as in forest production, pasture for domestic stock (recreation), or intensive wildlife production. In this case, its value as a "wild" area for scientific study diminishes, but it gains usefulness for other kinds of scientific and educational uses. Its value for (some) tourism and outdoor recreation diminishes, but is not necessarily lost. Its role in landscape and watershed stability is changed, but may be maintained at a relatively high level.
- 5. The wild vegetation and animal life having been removed in part, it can be intensively utilized for the cultivation of planted tree crops, pastures, or farming crops.
- 6. The wild vegetation and animal life having been almost completely removed, it can be used for intensive urban, industrial, or transportation purposes.

So long as any of the first three choices are taken, the option remains open to change to any of the others. In the fourth choice, the options for restoring the land to any of the first three levels are reduced, but not eliminated. Lands allocated to development are likely to approach the fifth and sixth level over time. This would largely prohibit any shift to other alternatives on those acres.

For Alternative I, with the resource allocations proposed herein, 19 percent of the lands are committed to categories of "low" or "moderate" irreversibility; about 80 percent of the land that is proposed for intensive timber culture, transportation systems, special uses, and rangeland management can be categorized as "moderately high." Another one percent would be considered "high" irreversibility of irretrievability for commitment of resources (Table S-10, FEIS Summary).

Timber Supply and Forest Management

Comparison of Past, Present and Alternative Timber Harvest Levels

The potential yield (PY) under the current timber management plan is the total harvest level that could be sustained assuming intensive forestry practices on all available acres. This includes adjustments to meet multiple resource objectives. This was calculated to be 20.86 MMCF (139.5 MMBF) and adjusted to 20.4 MMCF (136.5 MMBF) in 1984, as a result of the Oregon Wilderness Bull. A similar value was not calculated for the alternatives. It would be equivalent to a maximum timber FORPLAN run for each alternative if unsuitable v acres were included in the available acreage base.

The programmed allowable harvest under the current timber management plan is that part of the potential yield scheduled for harvest in a specific year (see Table 2-10). It was calculated for the current plan by: (1) reducing the acreage base by the acres of marginal land ^v that we did not plan to treat, and (2) by reducing yields based on difference in acres of intensive management (planting of genetically improved stock and precommercial thinning) predicted under the potential yield and what was actually planned to be accomplished. (This process was known as the "earned harvest effect" (EHE)). This could be adjusted annually if there was signifi-

^{1/} The current plan did not have a category called "unsuitable" so there was no reduction in available land base for lands that could not be reforested it did have a category called "marginal" which included steep slopes and critical soils, and stagnated submerchantable lodgepole. Some harvesting was programmed from these lands but it was a separate component and could not be substituted for "standard" volume or vice versa.

cant change in acres of intensive management practices or in marginal land treated from what was programmed. This was originally calculated to be 19.86 MMCF (132.7 MMBF) and was adjusted in 1984 to 19.46 MMCF (129.8 MMBF). This is equivalent to the Allowable Sale Quantity (ASQ) plus the salvage volume.

Table 2-10 displays the past actual sold and cut volume, planned harvest level from the existing plan, and range of harvest levels for each alternative. The range of harvest levels shown shows the highest and lowest predicted harvest level in board feet for the first decade. All volumes are average annual figures for a particular decade. This table also displays the estimated volume of ponderosa pine for this same period. Additional timber resource information by alternative and benchmark is also presented in Table 2-11.

The local industry is most interested in the ponderosa pine volume, and it has the greatest impact on the local economy, since much of the pine lumber is remanufactured to molding and other products locally. It is estimated that the sell volume has included 90 to 100 MMBF of pine in recent years. The current inventory shows 67 percent of the total volume is in ponderosa pine (see Appendix E). So the pine harvest in all alternatives will be 67 plus or minus five percent of the total harvest volume. However, the actual pine volume scheduled for harvest will vary considerably by alternative during the next five decades.

Effects of the Alternatives on the Ponderosa Pine Harvest

The range of ponderosa pine volume by alternative is displayed in Figure 2-3.



Alternative A has the highest volume of pine during the first decade due to the large proportion of harvesting in the first decade in two-story pine types. The volume decreases by about 30 MMBF after the first decade and remains at a relatively low level for the next four decades.

Alternative B-Modified would provide about 85 MMBF of pine during the first decade. Alternative B-Modified would maintain the highest level of pine during the first five decades of all the alternatives.

Alternative E-Departure has a first decade volume of 87 MMBF and declines to an estimated 52 MMBF in the fourth decade.

Alternative C-Modified would provide about 63 MMBF in the first decade, remaining constant through the fifth decade.

The pine volume in the long term (decades six and beyond) depends on harvest level and intensity of management. Alternative I provides for a stabilization of the ponderosa pine harvest over time, as does the other alternatives.

Uneven-aged Management

Uneven-aged management has been included in Alternatives B-Modified, C-Modified and I. This silvicultural system was included in these alternatives in response to public interest in its application as an alternative to clearcutting. Expectations would be increased size of ponderosa pine crop trees (20 inch DBH), improved conditions of forested habitat for wildlife and more desirable scenic qualities.

The range of acreage of ponderosa pine which would be managed with uneven-aged silvicultural systems is shown in Table 2-9 and Figure 2-4.



TABLE 2-10 COMPARISON - PAST, PRESENT, AND ALTERNATIVE TIMBER OUTPUTS 1/ (First Decade Volumes in MMBF)

TIMBER OUTPUT COMPONENT	ACTUAL 1979-88 Annual Ave.		EXISTING 1980 TM Plan	A L T E R N A T I V E S PLANNED VOLUME BY ALTERNATIVE FOR FIRST DECADE					
	Sold	Cut	PA.H 2/	NC	B MOD	E DEP	<u> </u>	A	C-MOD
SAWTIMBER (Chargeable) Green sales (ASC)3/ Est. pine volume 4/ Salvage sales	136 9 109 1 include	111 6 87 5 above	127 1 95 2 7	127 1 95 2 7	130 85 4	123 87 5	115 85 4	115 79 4	94 65 3
SALVAGE SALES & SAWTIMBER (Est. percent change in next five decades) 6/	136 9 5/	1116	129 8	129 8	134 (-7)	128 (-30)	119 (-10)	119 (-10)	97 (-10)
SAWTIMBER (Nonchargeable) negligable in existing or planned program	0	0	0	0	o	0	O	0	0
SUBMERCHANTABLE (Post, poles, cull)	13	13	Unestimated In existing or planned progam						
CONVERTIBLE PRODUCTS Firewood 7/	27	2.7	unestimated	unesti- mated	7	7	6	7	6
TOTAL (TSPQ)	138 2	110 1			141	135	125	126	103

1/ Note that due to different bases for calculation, these figures may not be directly comparable. However, they may be used to show changes in specific comonents for calculations, over time. All calculations were done in cubic feet. The volumes in this table are estimates based on board foot/cubic foot ratio

2/ Yield of tumber projected for the period of 1980 to 1989, as calculated for the 1980 Timber Management Plan and adjusted for 1984 Oregon Wilderness Bill The Programmed Allowable Harvest (P A.H) is the sawtimber from green and salvage sales scheduled for harvest.

3/ Allowable sale quantity calculated for the current land and resource management plan direction, projected into the future using new scientific information, such as yield tables and suitability for timber harvest, and using FORPLAN analysis model

4/ Estimated volume of ponderosa pine that is included in green sale volume

5/ Average volume sold was not adjusted for "buy-back" volume

6/ Reduction in all but E DEP is due to change in BF/CF ratio and estimated reduction in salvage volume as more stands become managed. Change in E DEP is mostly due to the planned departure from even-flow

7/ Actual firewood volume is based on years 1985 to 1988 Essentially all of this was sold as personal use Planned volume is the estimated amount if firewood available Typically less than half of this will be utilized

TABLE 2-11	
imber Resource Management Information by Benchmark and Alternative	Timber Resource

			Inventory		First Dec	First Decade Average Annual ASQ LTSYC		Av	Average Annual Net Growth				
Benchmark or Atternative 1/ Column	Selected Suitable Lands (M Acres) (1)	Begin (MMCF) (2)	Begin/Acre (CF) (3)	End (MMCF) (4)	(MMCF) (5)	% of Col (2) (6)	(MMBF) (7)	(MMCF) (8)	% of Decade Col (4) (9)	Met (10)	CF/Acre Present (11)	CF/Acre 2030 (12)	2030 MMCF (13)
Benchmark Max Timber Max PNV	518 518	1152 1147	22 22	730 762	23 4 22 7	20 20	142 139	23 4 22 7	32 30	2	27 30	43 39	22 3 20 1
Alternative NC 8-MOD E-DEP I-Preferred A C MOD	534 2/ 511 495 494 489 459	N/A 1115 984 990 970 895	N/A 2.2 20 19 20 19	N/A 799 760 792 740 751	N/A 21 8 20 6 19 0 19 3 15 6	N/A 20 21 19 2.0 17	N/A 130 123 115 115 94	31 1 21 8 19 3 19 0 19 5 15 6	N/A 27 25 24 26 21	N/A 1 1 2 1	25 22 26 28 28 24 30	N/A 41 35 37 39 28	N/A 20 8 17 4 18 2 19 2 13 4

		Area and % of Sultable Land by Yield Level					First Decade				
	Full	Yield	50-909	% Yield	Under 5	0% Yield					
Benchmark or Alternative 1/ Column	M Acres (14)	% Col (1) (15)	M Acres (16)	% Col (1) (17)	M Acres (18)	% Col (1) (19)	Clearcut M Acres (20)	Shelter- woodM Acres (21)	Overstory Removal M Acres (22)	Selection M Acres (23)	Harvest Total % Col (1) (24)
Benchmark Max Timber Max PNV	506 506	98 98	12 12	2 2	0	0	22 13	45 17	64 88	3 25	26 28
Alternative NC B-MOD E-DEP I Preferred A C MOD	413 484 0 0 0 0	77 95 0 0 0	89 27 495 492 489 459	17 5 100 99 100 100	32 0 0 2 0 0	6 0 1 0 0	0 25 14 9 19 15	119 50 26 21 18 4	64 21 113 53 106 32	0 68 4 62 1 96	34 32 32 29 29 32

1/ Tentatively suitable land for all alternatives is 533 M Acres

2/ This is based on 1972 land classification system and adjusted for Amendment #1 of the Timber Plan

Social and Economic Wants and Needs of Local Communities

This section compares and discusses the economic consequences of the alternatives. The comparisons focus on present net value (PNV), market and nonmarket values, costs, net receipts, returns to treasury, and non-cash benefits. Each alternative has non-quantifiable benefits and costs which should also be considered when attempting to rank the alternatives in terms of net public benefits. This section also discusses the social effects of the alternatives. Appendix B provides additional discussion on social and economic evaluations of the alternatives.

Differences in Present Net Values

Present net value (PNV) is the primary quantitative measure of economic efficiency used for all benchmarks and alternatives. It is also an important measure of the dollar value of the alternatives. PNV has been calculated to be the sum of all market and nonmarket priced values, less all management costs for the 50-year planning horizon, discounted to present values using a four percent interest rate. The relationship between PNV and net public benefits is discussed on pages 2-3 through 2-4 in this chapter.

The Max PNV benchmark and six alternatives are ranked by decreasing PNV in Table 2-12. Table 2-14 provides further detail on discounted costs and benefits by resource group. The Max PNV benchmark is provided as a reference point only. It is an estimate of the discounted net economic returns the Forest could receive for its priced resources if they were managed solely to maximize present net value.

The main factor influencing patterns in PNV, benefits, and costs is timber management. Timber values represent from 53 percent to 65 percent of the total dollar values in the alternatives. Values produced from selling timber are, in general, far in excess of related costs As timber harvest levels decrease across alternatives, discounted costs and benefits, PNV usually decrease as well. This pattern is due mainly to non-timber resource objectives restricting timber practices and harvests. Although recreation related benefits (including hunting and fishing) do make up a significant portion of the total dollar benefits (28% to 41%), increases in these dollar benefits do not make up for the PNV lost from timber. Therefore, the greater the non-timber resource objectives, the lower the timber discounted benefits and costs, and PNV.

This general pattern is modified by the intensity of the timber management activities employed. Some alternatives schedule timber practices and harvests at the most economically efficient level, given other resource objectives (Alternatives C-Modified, I, and E-Departure). Other alternatives apply more intensive timber practices to achieve the highest timber volumes possible, given other resource objectives (Alternatives A, B-Modified, and NC). This results in higher timber benefits, but also higher costs and lowered PNV. In each of these two groups of alternatives the general pattern discussed above holds. The exact combination of non-timber resource objectives and timber management intensity determines the ranking in PNV of these two groups together.

The PNV of the NC Alternative is an estimate. It is also based on a programmed harvest level of 129 MMBF. If the estimate was based on the potential yield of 136.5 MMBF, the PNV would be significantly higher.

The Forest and Grassland are considered to have potential energy resources. However, very little testing and development has taken place to date. No estimates have been made of future extractions, so energy values were not included in the economic analysis. However, oil and gas leasing provides significant returns to the Treasury and to counties. The alternatives have little effect on mineral activities.

Differences in Costs

Capital investment costs include trails, roads, reforestation, timber stand improvement, prescribed burning, and physical structures for range, recreation, fish, and wildlife. Other costs include operating and maintaining facilities, program management, and support costs associated with management of other resources. Capital investment costs pertain mostly to roads and timber stand management. For example, 76 percent (Alternative C-Mod) to 95 percent (Alternative A) of capital investment costs are associated with road construction and timber management. The majority of operation and maintenance costs are program management, followed by support funds necessary to carry out timber programs.

Because most costs are associated with timber management, the higher the timber output, the higher the costs. Generally, capital investment costs decrease significantly over time due to declining road construction and timber stand improvement practices. Operation and maintenance costs remain fairly constant over time except for alternative E-departure's where timber volume declines over time.

Fixed costs represent a relatively small portion of the total costs (20% to 30%). The remainder of the cost for each alternative varies with the objectives of the alternative.

Costs associated with timber practices and harvests constitute a large portion of the total costs. Alternative B-Modified has the highest cost of any alternative and only 29 percent of the discounted cost is directly attributed to resources other than timber and roads. Road construction and reconstruction is almost entirely tied to timber harvests on this Forest. Alternative C-Modified has the lowest cost of any alternative and the highest benefits associated with amenity outputs, yet only 35 percent of the costs can be attributed to resources other than timber.

Differences in Economic Benefits and Cash Flows

The total economic benefits of the alternatives come from priced resources which include both "market" outputs, and those with "assigned" values. Market values represent the unit price of an output that is normally exchanged in a market. On this Forest, timber is the primary market output, accounting for over 90 percent of the market outputs and 50 percent to 65 percent of the total economic benefits of the alternatives. Other market outputs include livestock grazing, campground use, special use permits, and minerals leasing. Assigned values represent the unit price of an output not normally exchanged in a market. Various analytical techniques were used to estimate values that people would be willing to pay for these benefits. Outputs with assigned values include dispersed recreation, wilderness use, hunting, fishing, and water quality improvement. Hunting and fishing are the major assigned values, comprising from 16 to 26 percent of the total economic benefits. The remaining 18 to 24 percent is split in different proportions, depending on the alternative, among livestock grazing, developed recreational use, dispersed roaded recreational use, and dispersed non-roaded recreational use.

Total market values range from 62 percent (Alternative C-Modified) to 70 percent (Alternative B-Modified) of the total economic benefits. Alternatives in the high end of this fairly narrow range have relatively high timber benefits and/or relatively lower fish, wildlife, or recreational values. The opposite is true for alternatives in the low end of the range.

Cash receipts are revenues returned to the Forest and Grassland for stumpage, grazing permits, campground fees, leasable minerals, and special use permits. However, the Forest generates economic benefits to users which are not realized in terms of cash flows. These are referred to as "noncash benefits." They refer to the benefits individual resource users receive when they are charged less for the resource than they would be willing to pay, or current market prices indicate they should pay. Noncash benefits are the difference between the full economic value of the resource and the fees actually paid to use that resource. Table 2-13 displays the relationships between total receipts, total budget costs, net receipts, and noncash benefits for each alternative in order of decreasing net receipts. All alternatives receive more money than they spend (net receipts are positive). Fish and wildlife provide the most noncash benefits in all alternatives, followed by recreation, then range. Timber provides nearly all of the cash receipts.

Generally the proportion noncash benefits contribute to total economic benefits increases as net receipts decrease. The decrease in net receipts as

TABLE 2-12

PRESENT NET VALUE AND DISCOUNTED COSTS AND BENEFITS OF ALTERNATIVES (Million Dollars) (Ranked by Decreasing PNV)

Alternative/ Benchmark	Present Net Value	Change	Discounted Costs	Change	Discounted Benefits	Change
Max PNV Benchmark 7	512		241		754	
Alternative I	475	-37	227	-14	701	-53
Alternative E-Dep	471	-4	221	-6	693	-8
Alternative B-Mod	452	-19	262	+41	714	+21
Alternative A	421	-31	236	-26	657	-57
Alternative C-MOD	395	-26	213	-23	608	-49
No Change	380	-15	245	+32	653	+45

TABLE 2-13 FIRST AND FIFTH DECADE AVERAGE ANNUAL CASH FLOWS 1/ AND NONCASH BENEFITS BY ALTERNATIVE (Million Dollars) (Alternatives Are Ranked in Order of Decreasing Net Receipts)

	ALTERNATIVES								
	1	E-Dep	NC	B-Mod	А	C-MOD			
DECADE 1 Total Receipts	194	20 2	20 2	17 9	172	140			
Total Costs	120	12 8	13 1	14.5	13 0	11 4			
Net Receipts	74	74	71	35	42	26			
Non-cash Benefits to Users	10.8	10 9	10 3	107	105	11 0			
DECADE 5 Total Receipts	21 5	18 4	187	25 3	20 2	187			
Total Costs	10 9	95	109	12 4	107	10 0			
Net Receipts	10 5	89	78	12 8	95	87			
Non-cash Benefits to Users	136	132	11 6	125	125	14 3			

1/ Payments to counties and expenditures by cooperators are excluded

TABLE 2-14 DISCOUNTED BENEFITS AND COSTS BY RESOURCE GROUPS (Millions of Dollars) 1/

	A L T E R N A T I V E S (Ranked by Decreasing PNV)								
		E Dep	B-Mod	A	C-MOD	NC			
PNV	475	471	452	421	395	380			
DISCOUNTED PRICED BENE- FITS BY RESOURCE									
Timber	422,6	415.9	446 1	392.4	322.4	413			
Developed & Dispersed Recreation	84 8	85 1	76 7	75 7	86 4	72 3			
Fish & Wildlife	154 8	152 1	151 0	149 7	161 5	103			
Range	20 5	20 5	20 8	20 2	19 1	18 6			
Minerals	190	19 0	19 0	19 0	19 0	18 2			
DISCOUNTED COSTS BY MA- JOR CATEGORIES									
Timber	49 6	50 7	70 1	64.8	41 1	69			
Roads	86 2	82 8	95 7	84 0	80 5	87			
Developed & Dispersed Recreation	117	82	11 3	52	12.7	5 1			
Fish & Wildlife	69	69	74	57	94	6			
Range	81	83	83	79	75	9			
Other 2/	59 4	59 9	63 5	63 7	57 7	55			
Soil & Water	48	47	51	46	44	4			

1/ Direct comparisons of benefits and costs by individual resource provide broad indications of specific relationships, but they may be misleading because many costs are nonseparable under multiple-use management

2/ These costs include general administration, cultural resources, lands and minerals, human resources, and protection

noncash benefits increase is a result of more land and resources being allocated to producing noncash benefits, thus lessening the resources available to produce cash receipts.

Table 2-13 (decade one) as compared to Table 2-12 shows that alternatives with higher net receipts in decade one generally have higher PNV's. This trend holds true in all but one case.

This case involves Alternative NC In Table 2-12, Alternative NC has the lowest PNV, but in Table 2-13 it has the third highest net receipts. The cause of this is two-fold: first, it has the lowest non-cash benefits of all the alternatives, and secondly, Alternative NC is different from the other alternatives in that it does not ensure meeting all management requirements. This allows more of the higher value ponderosa pine stands to be harvested in decade one. However, to satisfy particular harvest scheduling requirements, cash receipts drop off dramatically after the first decade. Table 2-13 shows that the net receipts for Alternative NC drop in rank from third in the first decade, to last in the fifth decade. Alternative NC also harvests timber at levels beyond that which is efficient in order to meet current sale levels. This results in higher total receipts, but also higher costs resulting in lower PNV's. As a result, Alternative NC has relatively high net receipts in decade one, but a relatively low PNV.

When decade five from Table 2-13 is compared with Table 2-12, the relationship between net receipts and PNV's is not as strong as it was for the first decade. The ranking of alternatives from highest net receipts to lowest net receipts shows the same changes from decade one to decade five. Alternatives E-Departure and NC have higher net receipts in the first decade than in later decades, while Alternative B is ranked higher by net receipts in decade five than in decade one. Because of the PNV discounting computations, high returns in early decades will affect the PNV more than high returns in later decades. The exception is NC, because the drop in net receipts is so sharp the net receipts in decades two to five outweigh the high first decade receipts, thus lowering the PNV.

Comparing the first and the fifth decades in Table 2-13, all alternatives show an increase in net receipts. The major factor is a decrease in costs because much less road building is necessary in the fifth decade. Also, real stumpage prices increase over time.

Noncash benefits for all alternatives increase from decade one to decade five. Part of this increase is a result of a projected increase in recreation demand. The rest of the increase can be attributed to habitat management for big game and fish. The time lag between habitat improvement and an increase in hunting and fishing causes benefits to show up most dramatically in future decades. The percent increase between decades one and five in noncash benefits ranges from 13 percent in the high commodity alternatives, to 28 percent in Alternative C, an amenity oriented alternative.

Social Effects

Direct Effects

The direct effects of the alternatives include the following:

Employment levels produced by the alternative's mix of outputs (see Table 2-15);

The amount of the Forest budget;

The amount of 25 percent monies paid to the counties.

Indirect Effects

The previously mentioned effects of the various alternatives would produce effects on the social fabric of the area as follows.

Effects on Occupational Lifestyles

For loggers and sawmill workers, Alternative B-Modified would increase employment by 44 jobs, which is around four percent of total logging and sawmill employment. Alternatives A, I, and E-Departure would produce increase of 14, 15, and 28 jobs respectively.

For workers in remanufacturing operations, the changes range from a three percent employment

TABLE 2-15 CHANGES IN EMPLOYMENT FOR VARIOUS ECONOMIC SECTORS BY ALTERNATIVE

	ALTERNATIVES							
Economic Sector	B-MOD	E-DEP	I Preferred	A	C-MOD			
Logging	14	10	5	5	-7			
Sawmills	25	18	10	9	-14			
Remanufacturing	35	30	8	3	-55			
Range-fed Livestock	1	1	1 1	1	0			
Retail Trade								
Produced by Wood Products Industries and	31	16	6	3	-22			
25% Monies]	1					
Produced by Recreation	21	49	45	18	51			
Other Sectors	64	73	43	19	-53			
Total All Sectors	176	196	118	57	-101			

(# of Jobs - First Decade)

gain (Alternative B-Modified) to a three percent loss (Alternative C-Modified). None of these changes is considered to be significant. However, the remanufacturing industry will be affected by the Forest Plans of several Forests. This matter is discussed in the Cumulative Effects section in Chapter 4 of this FEIS.

Merchants benefit from any alternative. The smallest gain, 21 jobs, is in Alternative A; the largest gain, 65 jobs, occurs in Alternative E-Departure. Small town merchants hire a smaller proportion of employees than do other business. Therefore, these figures are considered to understate the gains to the merchants. When these merchants do hire employees, they often work part time and for low wages. These jobs are often taken by women. Often these jobs provide a secondary income for a family.

Effects on Leisure Lifestyles

Alternative C-Modified would provide for the most recreational activities. Elk and fish are at the highest levels of any of the alternatives, as are opportunities

for roadless recreation. Landscapes appear most natural to the driver or hiker. Fuelwood gathering is the one activity which is at its lowest.

At the other end of the scale, Alternative A provides, in general, the least recreational opportunities. Roadless areas and fish are at the lowest levels. Unlike the other alternatives, there is no construction of trails for hiking, ATV's, cross-country skiing, or snowmobiling.

Generally speaking, Alternative B-Modified provides the next lowest level of recreational opportunities. Roadless areas and elk are low. The scenery is the lowest of all the alternatives. However, fuelwood is at its highest; and trail construction and increased numbers of fish improve the picture.

Alternatives E-Departure and I provide an intermediate situation. Alternative I provides more roadless areas, trails, and fish; while Alternative E-Departure offers slightly more elk plus a provision for a semiprimitive motorized area.

Effects on Social Structure[.] Community Cohesion and Stability

"Community Cohesion" is an estimation of whether a given alternative will tend to unify or polarize a community. While a diversity of opinions in a community is generally desirable, it is assumed that polarization of the community is harmful and that cohesion is beneficial. It is further assumed that polarization will be caused by the adoption of an alternative which greatly favors one point of view over others. In contrast, the selection of an alternative that meets to some extent the desires of diverse participants is assumed to produce cohesion.

Judging by this criterion, Alternatives B-Modified and C-Modified would produce polarization. The public response to E-Departure, the Draft Preferred Alternative, included many negative comments about its "departure" harvest schedule Under Alternative A, existing polarization would not diminish. Alternative I is the one alternative judged likely to promote some degree of community cohesion.

Livestock Grazing and Allotment Management

Alternatives E-Departure, I and B-Modified all seek to increase the forage available over time. Alternative B-Modified is the most aggressive of the three in its emphasis on forage production. Alternative C-Modified emphasizes amenities over commodity resource use and accordingly shows the lowest forage production for livestock. Alternatives NC and A maintain about the current level of forage production over time.



Riparian Area Management

All alternatives show some progress toward meeting the public and management concerns over livestock impacts to riparian areas. Alternatives NC and A would improve the least amount of riparian area over time, generally limiting the rehabilitation and enhancement to anadromous fisheries. Alternative E-Departure would improve more acreage by adding additional enhancement work on key trout fisheries, as well as to anadromous fisheries. Alternatives B-Modified, I and C-Modified would include rehabilitation and enhancement to bring 17,500 acress to "excellent" condition by the fifth decade. The desired future condition for these three alternatives would be "excellent for all of the 20,240 acres of riparian area on the Forest and Grassland.



Transportation System

The primary difference between the alternatives is in the management strategy for the miles of road maintained open for public travel. All alternatives close and or restrict use on some roads to protect the investment, to provide for public safety, to reduce soil erosion and degradation of water quality, and to


increase the wildlife habitat effective in key areas on the Forest and Grassland.

Big Game Habitat

A number of the alternatives provide for big game habitat through the dedication of or emphasis on management for winter range characteristics. The indicator for the responsiveness of the alternatives to this issue is the potential population levels of elk and deer that could be maintained. Table 2-9 and Figure 2-8 illustrate the responsiveness of each of the alternatives.



Table 2-9 and Figure 2-9 illustrate the areas allocated or dedicated to a wildlife management strategy (includes old growth and eagle roosting areas but is reflective of emphasis for big game).



Roadless Areas and Wilderness Study Areas

A number of the alternatives allocate or manage areas for unroaded recreation (nonmotorized and without roads). Table 2-10 and Figure 2-10 illustrate the area that will be maintained in an unroaded condition for the life of the planning period. The North Fork of the Crooked River Wilderness Study Area, 1,125 acres, is incorporated in all the alternatives.



Scenic or Visual Resources

Public and management concerns for the maintenance of the scenic qualities on the Forest and Grassland resulted in provisions for scenic resource emphasis along key travel corridors for a number of the alternatives. This is in addition to the visual quality objectives assigned to all alternatives. Table 2-9 and Figure 2-11 illustrate the area allocated or dedicated to a visual resource management emphasis.



Old Growth

Old Growth areas have been designated according the Regional definition for all all the alternatives considered in this FEIS. The range of acreage allocated is presented in Table 2-9 and Figure 2-12. Those alternatives with higher emphasis on commodity outputs, such as Alternative B-Modified, have lower allocations with total existing old growth rapidly depleting over time. On the other end of the spectrum, alternatives such as C-Modified with amenity value emphasis, allocate larger areas to old growth and will retain larger acreages over time



Fuelwood Supply

All the alternatives would supply a portion of the fuelwood demand on the Forest and Grassland. Those alternatives that have higher levels of timber harvest activity would supply a higher percentage of the demand. The amenity alternative, C-Modified, would provide the least amount of fuelwood Those alternatives such as I, which would stabilize the timber supply over time, would provide a more consistent supply than alternatives which depart from an even flow of timber harvest and experience a long-term reduction in harvest. A similar reduction in available fuelwood would shadow the decline in timber harvest.

The fuelwood supply for each alternative for decades one and five is presented in Table 2-9 and is illustrated in Figure 2-13.



Snag Dependent Wildlife

All the alternatives provide for the maintenance of a portion of the potential snag dependent species habitat. The ability of any alternative to provide snag habitat is directly related to its timber harvest strategy. Those alternatives with the higher timber harvest levels over time will have less ability to provide a portion of the potential habitat. The percentage of potential snag habitat is presented by alternative in Table 2-9 and is illustrated in Figure 2-14.



Winter Sports

All the alternatives are responsive, to a degree, to the public interest in having areas available for winter recreation. All the alternatives except for NC and A would provide for winter recreation at Bandit Springs through a 1,580-acre management area allocation. This area is presently closed to snowmobilers to allow for cross-country skiing and similar nonmotorized winter recreation pursuits.

The top of Lookout Mountain would be open to snowmobile use on all the alternatives except for C-Modified and E-Departure.

Anadromous Fish

All the alternatives provide for the rehabilitation of key riparian areas along all anadromous fisheries, and schedule enhancement activities to provide for maintenance or enhancement of steelhead production. Estimated smolt production over time is displayed in Table 2-9. It is planned to be the same for all the alternatives, that is anadromous fish production is assured at this level for all alternatives.

Historic Trail Preservation

The Summit Historic Trail is presently designated as a National Historic Trail and would retain that status for all the alternatives. Alternative I allocates 9,560 acres to protect the existing integrity of the trail and to preserve its historic and related scenic qualities.

Off-Road Vehicle (ORV) Use

The off-road vehicle use issue is an administrative problem for all the alternatives. At this point in time it is more of a social issue than one of resource impacts. All the alternatives would have adequate regulations in place to deal with resource impacts. Off-road use by ATV's, snowmobiles and motorbikes is seen as not being compatible with some resource emphases. Off-road use would be prohibited on all the alternatives for areas allocated as wilderness, wilderness study areas, and wild and scenic rivers - a total of 41,355 acres amounting to four percent of the Forest and Grassland.

Off-road use would be restricted to designated routes and prohibited from December 1 to May 1 for eagle roosting management areas (570 acres) for all alternatives.

The Bandit Springs area, in Alternatives B-Modified, E-Departure, I and C-Modified, would prohibit snowmobile use on 1,580 acres.

Alternative I would include a number of additional off-road vehicle use closures and restrictions. Motorized use would be prohibited on an additional eight management areas, a total of 35,580 acres amounting to four percent of the Forest and Grassland. Off-road use would be restricted to the summer months (closed December through April) to protect such resources as big game winter range on 186,790 acres amounting to 20 percent of the Forest and Grassland.

Alternatives B-Modified, C-Modified and I would begin to develop an ATV trailsystem to manage offroad use. The Forest and Grassland program for ATV trails is illustrated in Tables 2-8 and 2-9. The intent would be to move towards designating offroad use on specified trail networks and special areas over time. Alternatives NC, A and E-Departure would control ORV use through existing regulations with no special programs planned.

Round Mountain

None of the alternatives provide for any special resource allocations for the Round Mountain area, except for Alternatives B-Modified and I which allocate 1,000 acres along the Round Mountain National Recreation Trail corridor to provide for management of its scenic and recreational values. Activities and uses which take place on Round Mountain are considered to be part of the multiple uses which occur in the general forest.

Chapter 3

Affected Environment

CHAPTER 3 AFFECTED ENVIRONMENT

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